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ABSTRACT

A compilation of case studies of training programs for health personnel consists of nonevaluative descriptions of innovative efforts. Contents include: The University of New Castle, New South Wales, Australia: Developing a New Medical School (D. Maddison): Universidad del Valle, Cali, Colombia: Dental Manpower Training (R. Guerrero, C. Tasama): University of Kuopio, Finland: Reforms of the Health Care System in Finland--A Challenge for a New University (T. Vanha-Perttula): Universidad Autonoma Metropolitano, Xochimilco, Mexico: An Interdisciplinary Innovation in Medical Education (R. Villarreal): Tribhuvan University Institute of Medicine, Nepal (M. Shah): College of Allied Health Sciences, Madang, Papua New Guinea: Health Extension Officers (J. Banam): University of the Philippines College of Medicine: The Institute of Health Sciences, Tacloban--Search for a Model (A. F. Bonifacio): Faculty of Medicine, University of Edinburgh, Scotland: Introducing a New Curriculum in an Established Medical School (H. Walton): Mahidol University, Bangkok, Thailand: Training of Public Health Nurse Practitioners in Thailand (P. Limprasutr): The National School of Midwifery, Lome, Togo (E. Vovor): First and Second Moscow Medical Institutes, USSR: Reform of Medical Syllabuses (Ju. Isakov): University of Aden, Democratic Yemen: Medical Education in the People's Democratic Republic of Yemen (A. S. Bahattab): and The Medical Faculty at Novi Sad, Yugoslavia: New Trends in the Promotion of a System of Medical Education (D. Jakovljevic). (MSE)

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FOR REVIEW
POUR ANALYSE

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PERSONNEL FOR HEALTH CARE:

Case Studies of Educational Programmes

Volume 2

Edited by

E. M. KATZ & T. FÜLÖP

HE 013 442

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PUBLIC HEALTH PAPERS

No. 71

PERSONNEL FOR HEALTH CARE: CASE STUDIES OF EDUCATIONAL PROGRAMMES

Volume 2

OCT 2 0 1980

PERSONNEL FOR HEALTH CARE:

Case Studies of Educational Programmes

Volume 2

Edited by

F. M. KATZ and T. FÜLÖP

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INTRODUCTION

The publication of this second volume[1] of case studies forms part of the continuing efforts of WHO to promote effective health manpower development throughout the world. More particularly, by disseminating information about educational programmes which to a greater or lesser extent are innovative, that is, which have introduced new approaches in training a variety of health personnel, it is hoped to promote critical examination of present practices, programmes and processes.

The case studies provide the reader with examples of educational programmes that have been designed to meet a fundamental and universal challenge, namely to train health personnel able and willing to provide comprehensive health care, that care which is epitomized in the main social target of governments, international organizations and the whole world community in the coming decades—the attainment by all peoples of the world by the year 2000 of a level of health that will permit them to lead a socially and economically productive life, in brief "Health for all by the year 2000".

Each case study is an example of a determined effort to orient a training programme to the health needs of the community to be served by those trained. Each of the programmes is experimental in that it departs from current or traditional practices, either by giving priority to a community orientation or by using educational processes designed to engage students in problem-solving as a preparation for lifelong effective learning and performance.

By disseminating this information on what is being done and what is possible, it is hoped to meet the demand of those interested in knowing about alternative approaches but also to provide a challenge to others who, all too often, are content to follow well-established practices.

The case studies are not intended to be evaluations of the effectiveness, efficiency or impact of the programmes described but rather accounts of actions taken by concerned individuals, groups or governmental authorities. They describe what was and is happening, plans and their implementation, and difficulties encountered.

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[1] The first volume appeared as *Personnel for health care: case studies of educational programmes*. Geneva, 1978 (WHO Public Health Papers No. 70).

It is important to stress that the programmes described here have not been selected, and should not be identified, as models of what ought to be. In fact each is based on the premise that an educational programme should be specifically designed to meet the often unique health needs of a community and reflect the realities, confines and constraints of the prevailing political and socio-economic circumstances. It is this aspect, the application of the principle of relevance, that perhaps distinguishes most conspicuously these programmes from many others. All too often training programmes are copied from models in other settings and hence are irrelevant and inappropriate. This comment is not, however, to be taken as an argument against the importance of learning from the experience of others.

Relative to this, WHO has recently sponsored the establishment of a "network of community-oriented educational institutions for health sciences".[2] The 20 participants, coming from educational institutions[3] in as many countries, have enthusiastically committed themselves to collaborate in finding solutions to the many problems encountered in planning and implementing community-oriented programmes and in the use of a problem-solving educational process. Each programme is in some respect unique but each also has to find solutions to problems which are commonly met with by all or by most of the participants in the network.

During the meeting, it became quite clear that each of the institutions faces problems commonly experienced in trying to implement innovations. The following are some examples taken from the report of the meeting[4]:

Faculty members:
- all innovation is judged to be threatening;
- involvement in innovation is time-consuming, seriously limiting the time available to the staff member for his own professional development, the undertaking of research and so on; moreover, younger faculty members fear the consequences of heavy commitment to education when they seek promotion or appointment which is usually based on publications elsewhere.

Students:
- some students resist innovative approaches which conflict with their own expectation of what medical education is all about, and which may challenge their past learning styles;
- some students are, from the beginning, strongly oriented towards some type of medical specialization;
- pre-university education, because in so many instances it emphasizes rote learning, may provide an inadequate preparation for problem-based, community-oriented studies.

Health and disease:
- our conception of "health" is much less refined than our conception of "disease"—hence it is easier and more comfortable to work within the latter framework;
- in consequence, there are problems in providing sufficient emphasis on health and health promotion within the faculty's programme.

Faculty organization, structure and finance:
- when the organization and thus the programme of the school are dominated by strong departments, innovative education is probably impossible;

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[2] The inaugural meeting of the network was held in Kingston, Jamaica, 4–8 June 1979.

[3] Many of these institutions are described in the two volumes of these case studies.

[4] Report of the inaugural meeting (WHO document HMD/79.4).

— in many countries, government funding within the health sector provides a disproportionately small share of the budget for educational activities, excessively concentrating its funding on curative medicine and research.

Educational strategies:

— techniques of evaluation (student assessment) are still grossly imperfect in their ability to measure the student achievements which are of particular importance in innovative programmes;

— generally speaking, there is a lack of learning materials suitable for the implementation of these new approaches.

Health care systems:

— the dominance of hospitals as sites for medical education, a preoccupation with third-level care, concentration on high technology medicine, excessive specialization: all were seen to be inimical to the development of community-oriented programmes;

— more generally, many existing patterns of health service delivery were found inappropriate for innovative education—in particular, an artificial separation between preventive and curative services, fee-for-service systems, a lack of proper regional autonomy resulting from over-centralization, and a lack of appropriate positions for those who graduated from innovative programmes, many of whom were compelled, or attracted, to work in more prestigious, better equipped and better funded hospital posts.

Health professionals:

— the vested interests of individual professionals were often threatened by innovative programmes, and the professional associations frequently tended to support such individuals against the educational system.

However, there are also factors and conditions—and some of these were identified at the meeting—which encourage the implementation of innovation and particularly the development of relevant community-oriented programmes for health manpower. Among these is the increasing pressure for accountability, for justification of the vast and increasing proportion of taxpayers' money being spent on education and health services. It is also evident that many of those responsible for planning and teaching health personnel are now committed to "produce" health workers who will face up to the challenge of health care for all.[5]

It is this concern which is also so evident in the case studies presented here, concern with community health and primary health care. The wish to make training appropriate to this goal appears to be the most powerful force motivating the innovations, whether within existing institutions or through the creation of new institutions, whether in industrialized or developing countries. Since this is also the primary goal of WHO, expressing the determination of its Member States, it seems appropriate to examine how the programmes described in these case studies reflect the principles of primary health care as identified in the Declaration of Alma-Ata.[6] This, perhaps the most important landmark in the recent history of man's efforts to bring health to the people of the world, defined primary health care as: "essential health care based on practical, scientifically sound and socially acceptable methods and technology made universally accessible to individuals and families in the community through their full participation and at a cost that the community and country can afford to maintain at every stage of their development in the spirit of self-reliance and self-determination".

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[5] WHO as part of its health manpower development programme has promoted a global teacher-training programme which has influenced tens of thousands of teachers throughout the world at least to the extent of critically examining present practices and searching for feasible alternatives.

[6] *Primary health care: report of the International Conference on Primary Health Care, Alma-Ata, USSR, 6–12 September 1978.* World Health Organization, Geneva, 1978, pp. 2–6.

The characteristics of primary health care elaborated in the Declaration provide a valuable set of criteria by which to examine health services. By implication, since health manpower is an essential requirement for the effective functioning of such services, training programmes can equally be submitted to careful scrutiny using these criteria to examine the extent to which they prepare their students for primary health care roles.

How far then do the programmes described in this volume meet these requirements? The first characteristic of primary health care is that it

> *"reflects and evolves from the economic conditions and sociocultural and political characteristics of the country and its communities and is based on the application of the relevant results of social, biomedical and health services research and public health experience"*[7]

As indicated above, all the programmes described in this publication share the attribute of being specifically and explicitly focused on the requirements of the health services in their respective countries. This is exemplified clearly by the case studies of programmes in Democratic Yemen and Nepal. Both countries had relied on physicians trained elsewhere, and both set up their own schools with the principal objective or declared intent to train doctors specifically for the social and political conditions of their respective countries.

Similarly in Papua New Guinea the training programme for health extension officers was a direct response to prevailing conditions and the recognition that the most beneficial service could be rendered by non-physicians working at the village and health centre level.

The Tacloban programme in the Philippines clearly demonstrates the planning of training for a variety of health workers to provide service in rural communities.

That sociocultural and economic factors were influential in formulating the educational plan is also specifically referred to in the case studies describing programmes in Australia and Togo. In the latter, specific reference is made to the need for understanding traditional culture and health practices in order to gain the confidence of the people when promoting good health practices and trying to change bad ones.

In each of the case studies, but particularly in that of the newly established programme in Newcastle Australia, reference is made to the important influence of economic social and political conditions on efforts to create a more community-based and health-oriented as opposed to disease-oriented medical training programme. Unfortunately, too often the promotion of health as distinct from the cure of disease conflicts with existing beliefs, values and professional practices, and may be in opposition to some present political, social or economic interests.

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[7] This quotation and the others appearing later in this introduction are from the Declaration of Alma-Ata (see preceding footnote)

The second characteristic of primary health care as found in the Alma-Ata Declaration is:

"Primary health care addresses the main health problems in the community, providing promotive, preventive, curative and rehabilitative services accordingly"

Most training programmes for health personnel rely almost entirely on the teaching hospital as the educational setting. Inevitably, the resultant training orientation is therefore curative, specialist, high technology and elitist.

Most of the programmes described here have made valiant attempts to redress this situation by using as training settings general practitioner practices, smaller community hospitals and health centres. This approach is exemplified by Edinburgh and Kuopio, and extensively employed in the public health nurse practitioner training programme in Thailand. The latter also points to the importance of bringing the staff of the smaller health units in at the planning phase of an educational programme. Relevant to this is the account of Novi Sad's survey of its graduates working in general practice as a means of identifying major deficiencies in the training programme.

Perhaps the most effective means for ensuring that the training given is appropriate to the health problems of the community and is health-oriented is the close coordination or even integration of health services with training. One way to achieve this is illustrated in three case studies where responsibility for health care of a specified community is given to the training programme. The Xochimilco school is responsible for the health care of part of Mexico City with a population of two million. The Institute at Tacloban (Philippines) provides the health manpower for a whole region, and most teachers have responsibilities in the health service. In fact, the Director of the programme is also the Regional Director of Health. In Papua New Guinea, the College of Allied Health Sciences is responsible for the health care of 110 000 people in two subprovinces, which in turn ensures that trainees are participating in clinical, administrative and public health activities.

"Primary health care includes at least: education concerning prevailing health problems and the methods of preventing and controlling them; promotion of food supply and proper nutrition; an adequate supply of safe water and basic sanitation; maternal and child health care, including family planning; immunization against the major infectious diseases; prevention and

control of locally endemic diseases; appropriate treatment of common diseases and injuries; and provision of essential drugs"

These requirements or activities to be performed by primary health care workers highlight the responsibilities referred to in the previous section for other than individual curative care. The specific type of action or task will necessarily vary in relation to the needs of the community.

The objectives of several of the programmes refer to the competencies or responsibilities which those who have been trained are expected to assume. These include, for instance in the case of Nepal, responsibility for improvements in sanitation, water supply and other preventive measures.

The University of Newcastle, Australia, has formulated explicit learning objectives which require students at the end of their studies to be able to care for populations as well as individuals, and to take preventive and promotive action as well as perform the more traditional curative functions for the sick.

"Primary health care involves, in addition to the health sector, all related sectors and aspects of national and community development, in particular agriculture, animal husbandry, food, industry, education, housing, public works, communications and other sectors; and demands the coordinated efforts of all those sectors"

There is no direct reference to intersectoral or collaborative effort with other social or economic activities in any of the case studies. It is, however, implicit in some of the learning objectives and experiences provided for students.

The potential at least of such collaborative action is particularly evident in Xochimilco, where students training for many occupations follow a common first-year course (social sciences, agriculture, architecture and design, and communications), and the University (i.e. all the schools) are engaged in and responsible for the development of the one area of Mexico City.

"Primary health care requires and promotes maximum community and individual self-reliance and participation in the planning, organization, operation and control of primary health care, making fullest use of local, national and other available resources; and to this end develops through appropriate education the ability of communities to participate"

This all-important feature of primary health care is perhaps also the most difficult to translate into action, depending as it does upon prevailing political and social structures. Examples of community control can be found in the medical school at Novi Sad, Yugoslavia, and the community health centres in Finland where the Kuopio medical students are trained; both have built-in administrative relationships to community bodies.

Another example of community control is found in the programme at Tacloban in the Philippines where the community rather than the student health worker is seen as the "client" of the training programme. Decisions to train health workers to the next level of skill depend upon community needs rather than just the desires and aptitudes of the health worker.

While there are these and other indications of a concern to involve the community, to engage in dialogue and increase community participation, there is certainly no significant attempt to increase community influence over the training process and its goals. This is perhaps not surprising since it is almost a "heretical" notion to involve non-professionals in planning and implementation of an educational programme.

"Primary health care should be sustained by integrated, functional and mutually supportive referral systems, leading to the progressive improvement of comprehensive health care for all, and giving priority to those most in need"

Even setting aside the social, financial and logistical problems that universally plague attempts to create efficient and supportive referral systems, the task of medical educators is still not easy. The emphasis of many of these case studies has been on developing primary health care workers; the Moscow Medical Institutes illustrate the need to train cadres of specialists at the right time in order to create an appropriate referral system.

Most medical schools operate with the knowledge that their graduates will pursue a wide range of primary health care and specialty careers. Defining the levels of competence of these different kinds of doctors, as is done at Newcastle, Australia, helps both to define and to rationalize the referral system, and is valuable in drawing up realistic and appropriate objectives for the basic medical curriculum. This process needs, of course, to be applied in a coordinated fashion to all health workers operating in a health system.

Health extension officer students in Papua New Guinea are helped in learning when and how to refer patients by having patients admitted to their "health centre" ward in the district hospital where they do their training; only those patients requiring the skills of a doctor are referred to the other wards.

"Primary health care relies, at local and referral levels, on health workers, including physicians, nurses, midwives, auxiliaries and community workers as applicable, as well as traditional practitioners as needed, suitably trained socially and technically to work as a health team and to respond to the expressed health needs of the community".

The extent to which training programmes can encourage the fruitful cooperation of different kinds of health workers will depend to a large extent on the social structure of the society and the health professions, and also on the personalities of the students recruited. The issue of student selection is raised in several of the case studies described here. However, the only one where student selection has been specifically related to the creation of teams to meet community needs is the case study on Tacloban in the Philippines. Advancement through the different levels of health worker also ensures that the more skilled members of the team have experienced the problems and needs for support of the less skilled members.

In a similar, though perhaps less thorough way, the students at several of the other institutions described progress through, or must experience, the work of different kinds and levels of health worker during the practical phases of their training.

At Cali, Colombia, as well as the training given to different kinds and levels of dental manpower, research is undertaken into the optimal team structure to meet community needs.

It is apparent that the orientation of many if not all of the educational programmes described in this volume does reflect concern to develop health manpower able to contribute to primary health care.

It is evident also that the achievement of such noble objectives will be beset by difficulties. It will require a commitment to pioneer and to resist the many pressures to conform. It will require on the part of all concerned an active search for alternatives, for effective, feasible procedures to train health personnel and then to ensure that the training is utilized for optimal health care.

The pioneers are to be congratulated and hopefully their example will encourage and strengthen the resolve of others.

* * *

In focusing on the relevance of these training institutions to the provision of primary health care, we do not wish to overlook the many educational issues that are raised in the case studies. For some more comprehensive comments which are still relevant to the studies in this volume, the reader is urged to refer to the introduction to the first volume of these case studies.[a]

It may, however, be useful to include here the series of questions posed in that introduction so that they can be used as a framework for studying the present set of case studies.

1. How can an educational programme be effectively coordinated with the health service to ensure that it fulfils its proper functions in improving the health status of the community of which it is a part?
2. How can an educational programme ensure that it is oriented towards or is relevant to the health needs of the population?

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[a] KATZ, F. M., & FÜLÖP, T., ed. *Personnel for health care: case studies of educational programmes.* World Health Organization, Geneva, 1978 (Public Health Papers No. 70), pp. 9–18.

3. How can the content of an educational programme be identified, or what should the student be expected to learn?
4. How can the process by which the student is helped to acquire the requisite abilities, including attitudes and values, be made optimally effective and efficient?
5. How can student and teacher performance, as well as that of the programme as a whole, be evaluated and hence further the improvement of learning, of teaching and of the programme?
6. How should students be selected to optimize the effectiveness of the learning opportunities provided and maximize the likely usefulness of the graduates in the provision of health care?
7. What type of organizational structure is appropriate to the realization of institutional objectives which emphasize relevance, problem-oriented student learning and integration? In addition, which organizational structure provides the opportunity for members of the institution to participate in the decision-making process, and thus to feel encouraged to expend effort, and which organizational structure is most likely to produce a supportive climate for learning?

Acknowledgement

The editors wish to acknowledge the invaluable assistance of Dr Iain Aitken in the preparation of this volume.

CHAPTER 1

THE UNIVERSITY OF NEWCASTLE, NEW SOUTH WALES, AUSTRALIA:

DEVELOPING A NEW MEDICAL SCHOOL*

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* Segments of this paper have been adapted from documents prepared by my colleagues, Professor R. M. Clarke and Professor T. Vinson, whose contribution is gratefully acknowledged. The final responsibility for this paper, however, is my own.

EDITORIAL NOTE

In the founding of the Medical Faculty at Newcastle University, the emphasis was not primarily on the need to produce more doctors, whom many believe to be already in sufficient numbers in Australia. Rather, it expresses a need to make medicine much more responsive to the needs of the community, and to use effective and efficient educational processes.

The first part of the paper describes the philosophy and objectives of the education programmes. These were derived from a careful analysis of the Australian health care system and the problems of current medical care.

The new philosophy and objectives have a number of implications, first for the selection of students. Academic performance alone was seen to be an inadequate criterion. Therefore, a number of community representatives were asked to draw up a set of selection criteria. At present 50% of the students are selected on the basis of these criteria, and 50% are selected purely on academic performance. An evaluation of the two sets of criteria will be made later.

Since the operation of the curriculum would depend very much on the staff selected, and the order in which they became involved, a deliberate choice was made to include in the first batch of foundation professorial appointments an associate professor of medical education, a professor of behavioural sciences, and a professor of community medicine.

The teaching strategy as reflected in the curriculum, and the process used, focus on the management and solution of clinical problems, e.g., chest pain. Students learn by working on these problems either individually or in small groups. Much of the work is done in the community, and the students are encouraged to distinguish the different kinds of competence required by a general practitioner and a specialist in dealing with different conditions.

The administrative structure has sought to avoid the traditional departmental structure with its known dangers.

Because of its many innovatory features, the programme may be of special interest to the reader.

For a dean and his foundation professorial colleagues, there is (or should be) an inherent challenge in the development of a new medical school, with its opportunity to exercise an unusual degree of influence in the shaping of medical education so as to prepare practitioners for the effective performance of the tasks that will confront the doctor of the future. The foundation professors at Newcastle agreed that, if the School were to lack a coherent basic philosophy, it would probably become an expensive mess, almost inevitably falling back into traditional ways. Very early in the life of the Faculty, therefore, the first group of staff accepted the challenge to confront the following issues which were identified as being of vital importance.

First, without sacrificing the need to provide quality care for individuals, the School would need to place a greatly increased emphasis on the care of total populations: those who seek assistance and those who do not, those who label themselves as sick and those who decline to do so, both the hypochondriacs and those who live in reckless disregard of their own health, the affluent and the disadvantaged, the indigenes and the immigrants.

Secondly, there was a need to respond, in a positive, enlightened but still essentially scientific way, to the increasing clamour for greater evidence of humanity and caring, and for more effective communication between patient and doctor, in this highly technological age. The previous experience of the new staff members made it apparent that even some senior and highly traditional medical educators were complaining that clinical medical students and young graduates seemed unable to establish effective communication with their patients.

Thirdly, it was agreed that the scientific method, with all the objectivity that it implies, must nevertheless remain central to the practice of medicine and thus to medical education. Research development would be a central issue, but positive action would need to be taken towards closing the widening gap between, on the one hand, some of the excellence of academic and research medicine and, on the other hand, the problems of the patient in the community whose life was far less influenced by this excellence than he had a right to expect. It would also be necessary to ensure that "science" in medical education should embrace more than the traditional biological and laboratory sciences.

Fourthly, it was considered that the educational programme should follow up the implications of the frequently repeated statement that patterns of illness are steadily changing, most obviously in the developed world. The natural corollary is that doctors would need to foster the preventive attitude; and health education would need to gain importance, for control of the diseases of the future seems less and less likely to be achieved by manipulation of the environment, the essential element being alteration in the behaviour of people. The doctor then would need increasingly to think of himself as an educator and would have to be appropriately prepared for this role, for better informed and less deferential patients would demand more detailed explanations and a much greater degree of involvement in the management of their own illnesses.

Fifthly, a new medical school must direct attention—in its education, research and service programmes—to those aspects of the diseased human condition which have tended to be ignored because regarded as distasteful, messy or unrewarding; the problems of drug dependence and geriatrics are obvious examples.

Finally, medical graduates of the future would need to have a much clearer idea of what is truly a health problem and what is not, and to arrive at a much more sophisticated appraisal of the place of the doctor in modern society. It was considered that students and graduates would need to be concerned with that quite immense territory of overlap between health problems and social problems. They would need to recognize (and the facts are clearly set out in the history of public health) that the improvement of certain major environmental problems might, without a doctor being anywhere in sight, do more to alter patterns of urban morbidity than the efforts of a hundred medical graduates. They would need to appreciate that, if a team of young psychologists were to devise a really effective alcohol education programme for an adolescent and young adult population—alcoholism being a serious public health issue in Australian society—this would do more to affect patterns of illness 20 years later than 100 liver specialists devoting their lives to ameliorating the end patterns of alcohol excess.

AUSTRALIA AND ITS HEALTH SYSTEM

In translating these very general statements of intent into a viable education programme, it has clearly been necessary to take cognizance of the characteristics of the health system in which medical education and medical care are embedded. The Australian system relies heavily on individual and family health insurance; initially voluntary and organized through a complex system of private health funds, this later became compulsory and was heavily subsidized from general revenue when it came to be recognized that, in general terms, those most in need of care belonged to the minority of the population who elected, for whatever reason, to remain outside the insurance scheme. As in every other country in the world, the Government has found in recent years that it has been required to devote an increasing proportion of the gross national product to underwriting the costs of medical treatment, and its concern with mounting costs, together with a long overdue interest in evaluation, are now leading to a number of changes in the basic system. Under the influence of a conservative Government, these changes, not surprisingly, are in the direction of extracting a greater measure of financial commitment from the individual patient. All this takes place in the context of a system which is, unlike its British counterpart, largely committed to a fee-for-service mode of operation; it is, as an article in *Lancet* once expressed it, "private medicine, State supported".

Such a system, of course, is well suited to the needs of the educated middle class (who are on the whole well motivated towards seeking professional help), provided that their illnesses are of relatively short duration and of less than catastrophic proportions. Because of the essentially middle-class nature of Australian society, the scheme gains a large measure of acceptance from the population. There are, however, many problems (in addition to that of escalating and seemingly uncontrollable costs) to which a number of observers are now giving serious attention:

(*a*) Although, in the euphemistic language of today, it is always referred to as a health service, it is of course an illness service, with but a tiny fraction of the national budget being devoted to the development and implementation of preventive programmes.

(*b*) In common with many other health services in the developed world, it is becoming a service which relies increasingly, and some would say excessively, on very high-level technology; conversely, there are many complaints about the impersonality of medical care and the relative failure of medical practitioners to show either interest or competence in managing the complex psychosocial problems which are so frequently intertwined with physical complaints.

(*c*) There are substantial minorities within society for whom inadequate care is still being provided. The most notorious of such disadvantaged groups is the indigenous aboriginal population, but many factors interfere with the standard of care provided for migrants, particularly the relatively recent arrivals, and there are also many inadequacies in the provision of care for the elderly (inadequacies which may, of course, reflect as much on the structure of present-day Western society as on the health care system itself). Much attention has also been focused in recent years on some unsatisfactory aspects of the health care provided for women, in a society which has always prided itself on its allegedly rugged masculine image.

(*d*) The service is very heavily slanted towards the provision of curative care by medical practitioners, and in many respects it is true to say that, except for the activity of a few innovative planners, only token acknowledgement has been given to the concept that the health problems of the future increasingly will require the building of an effectively trained team. Only gradually is it becoming acceptable to scrutinize the role of the doctor in the delivery of health care and to examine the need for involvement of community agencies of various kinds: health educators and health planners, social workers, marriage guidance counsellors, pharmacists, speech and occupational therapists, physiotherapists, dietitians, special educators and so on. The training and utilization of medical auxiliary workers are only now becoming matters for serious study and concern. No attempt has been made in Australia to develop a school for the education of health professionals which would be sufficiently comprehensive to include medical students; with a few exceptions of doubtful significance, the average doctor in Australia will have graduated after only minimal contact with students and professionals from those many other disciplines involved in the maintenance of health and the treatment of disease.

Finally, it must be pointed out that Australia, like so many other countries, has an extremely poor record in the area of health manpower planning; these few studies that have been done have been of the point-prevalence type, useful at the time but difficult to relate to ongoing trends within the country and within South-East Asia as a whole. The problems experienced by the Faculty of Medicine at the University of Newcastle in this dimension will become more apparent in the next section. The absence of a coherent health manpower programme is, however, only one facet of a much wider and even more important problem, namely, the extremely poor communication between the education and health arms of government at both national and state levels; many of the difficulties experienced by innovative medical schools in Australia derive from this gross hiatus within the national planning process. The country lacks any single authority responsible for health professional education as a whole, or for medical education in particular; it is hard to imagine any single development which would be more conducive to the rational, balanced development of programmes in health professional education, appropriately geared to the needs of the entire population.

THE FACULTY OF MEDICINE WITHIN THE UNIVERSITY OF NEWCASTLE

The University of Newcastle became an autonomous institution in 1965 after a period of 13 years during which it was a College of the University of New South Wales. It is a tertiary institution, small by Australian standards, with a total student population of approximately 4500 and only seven faculties apart from Medicine: Architecture, Arts, Economics and Commerce, Education, Mathematics, Engineering and Science. It is far from being a traditional university, but the way in which it is organized and the academic habits that have already been established within the other faculties still create many of those relationship difficulties which are encountered anywhere in the world when a university takes upon itself the business of medical education. While members of the academic staff had in the past consistently supported the notion that Australia's next medical school should be at Newcastle, some of the same individuals now express a good deal of concern lest the future financial demands inevitably generated by medical education become a drain on the University's budget and add to the financial problems of other faculties and departments.

This problem has been highlighted by the extraordinarily rapid change which has occurred in the state of the Australian economy (indeed, the state of the world economy in many respects) between 1973, when the Australian Government announced its decision to develop a new medical school in Newcastle, and 1978 when the first class of students was admitted. Moreover, in this short space of five years, two other developments have led to a powerful and critical spotlight being trained on the developing and still rather fragile medical school: first, an awareness that, for a variety of reasons, Australia is likely to have a higher doctor/patient ratio than previously predicted and, secondly, a rapidly mounting awareness of the extent to which doctors are the prime generators of health care costs, with its corollary that any excess of doctors within the system will provide an unnecessary burden on the health budget. In strong contrast to the climate of opinion which existed as recently as five years ago, there are now some people (including some in quite high places) who seriously doubt the wisdom of the initial decision to establish the school.

The medical school, however, is by now an established reality; its first large building, to house the Medical Sciences, has been completed on the University campus and construction of the major Clinical Sciences building on land adjacent to the Royal Newcastle Hospital (some 12 kilometres from the campus) will be completed by the end of 1980. Now that the first class of students is well and truly immersed in their studies, the medical school is clearly accepted as a going concern. As will be clear from the description that follows, the school has accepted the challenge, implicit in the government's initial decision, that it should be an innovative school in educational terms and that it should be linked more closely with its community than is customary in Australia. Budgets are tight, nevertheless, and it would be foolish to deny that the price of innovation is substantial, at a time when auxiliary (i.e., nongovernmental) funding has become more and more difficult to obtain.[1]

THE DEVELOPMENT OF OBJECTIVES

Without any doubt the most important task undertaken by the foundation professors was the spelling out, in reasonable detail, of the objectives towards which the undergraduate education programme would be directed. Virtually all the major educational decisions taken by the foundation professors derive from consideration of these objectives. It was considered that, without such a foundation, the Faculty could all too easily become involved in change for change's sake; alternatively, without clear objectives, certain components of traditional medical education might be uncritically continued, which would be directly opposed to the general aims.

The resulting document, entitled "Undergraduate Programme Objectives", provided a series of 45 programme objectives, grouped under six headings:

Objectives related to the student's own learning;
Objectives related to scientific method and procedure;
Objectives related to clinical diagnosis, investigation and management;
Objectives related to attitudes and personal characteristics;
Objectives related to community medicine;
Objectives related to the doctor/patient relationship.

A sample of these objectives may give the flavour of the approach; for example:

— the graduate (at the time of graduation) has demonstrated his ability and his willingness to achieve and maintain responsibility for his own learning, and for the continuing evaluation of his own performance as a physician;

— the graduate has demonstrated the ability to monitor, granted appropriate consultation, his own progress in the acquisition of information and skills;

— the graduate has demonstrated that he accepts that medical education in its full sense is a lifelong activity and that he is prepared to invest time in the maintenance and further development of his own knowledge and skills, over and above the pursuit of higher professional qualifications;

— the graduate has demonstrated that he can make reliable observations of cellular, physiological and behavioural phenomena and that he can extract the relevant data from these observations, integrating where appropriate the information provided from these three perspectives on human biology;

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[1] The Faculty of Medicine has been very greatly helped in this respect by a generous grant from the W. K. Kellogg Foundation, Battle Creek, Michigan, USA, which has provided substantial support for educational development during the first five years of growth.

- the graduate has demonstrated his ability to assess the reliability of conclusions based on reported data and to comprehend the standard forms of statistical treatment employed for the analysis of such data;
- the graduate has demonstrated the ability to adopt a problem-solving approach to clinical situations;
- the graduate has demonstrated his ability and willingness to devise and maintain an appropriate management programme for patients with chronic, intractable illness, including terminal disease;
- the graduate has displayed an ability to plan and interpret a programme of investigations appropriate to the clinical problem presented by the patient, with due regard for patient comfort and safety and for economic factors;
- the graduate has demonstrated that his approach to all patients reflects the attitude that the person who is ill is more important than the illness from which he suffers;
- the graduate has demonstrated his understanding of the importance of environmental factors in the causation and maintenance of illness, and in its response to treatment;
- the graduate has demonstrated a positive, consistent and informed attitude towards the prevention of illness and the maintenance of health, at both individual and population levels;
- the graduate has demonstrated that he has the necessary knowledge to make an effective contribution to the identification and solution of community health problems and to evaluate the results of his intervention;
- the graduate has demonstrated his awareness of the role of the physician in health/welfare professional teams and also his willingness to work cooperatively within such teams;
- the graduate manifests a positive attitude towards the concept of the physician as an educator, for example, to his patients with regard to their illnesses, to the public in matters of health and to his colleagues in professional matters and relationships, and shows an appropriate level of ability and confidence in this role;
- the graduate has demonstrated the ability to interpret and criticize data from evaluation studies of medical services supplied to communities or populations;
- the graduate has demonstrated the ability and willingness to establish effective communication with a wide variety of patients, healthy members of the community and other professionals.

From the formulation of these objectives evolved all the major developments in the programme: the specific structure of the educational experience, the characteristics of the assessments used to monitor student progress, the school's policy on the selection of students and, most importantly, the academic posts identified as essential for the fulfilment of these aims and the type of person chosen to occupy them. These topics are discussed below.

THE SELECTION OF STUDENTS

The traditional basis for admission to Australian medical schools is academic achievement, demonstrated most commonly in a major examination at the conclusion of the high school years. This provides an apparently objective, relevant, administratively uncomplicated and therefore relatively inexpensive basis on which to allocate student places. Nevertheless, the Faculty of Medicine at the University of Newcastle, in the light of its objectives, felt compelled to adopt a more comprehensive approach which would take into account certain characteristics, personal and intellectual, which were considered to be relevant to the effective practice of medicine as conceived by the foundation staff. Moreover, the objectivity which is alleged to be the prime virtue of a total reliance on previous academic achievement is probably more apparent than real, given the inevitable margin of error involved in assessment based on a single academic performance.

In line with the programme objectives which attempt to relate the school to its local community, the Faculty therefore decided to invite a group of community representatives to assist in the formulation of its policy on student selection. Six non-Faculty people acted in this capacity: the Lord Mayor of the City, a senior trade unionist, a business executive, a social worker and two medical practitioners; three of these six community representatives were women. They set about the task of defining an appropriate policy with two overriding aims, an intent to produce effective medical practitioners and a desire to enhance the educational process and minimize student wastage. It was also considered that any reasonable policy must give appropriate consideration to the needs of the local citizens, for a community campaign which had been waged over many years had played a significant part in the decision to establish the Faculty of Medicine.

It was eventually decided that there would be major policy advantages in selecting half of the available places on the basis of academic achievement alone, the remaining half on the basis of a number of personal and intellectual characteristics, one of which would certainly need to be a reasonable (but not absolutely outstanding) level of past academic performance. From the beginning, the Faculty considered that it would be essential to submit this unusual policy to as stringent an evaluation as possible, and many precautions have been adopted to this end; in the not too distant future (but even more convincingly, of course, after graduation) it will be possible to report on the presence or absence of differences in performance between the two groups of students.

For those students selected on the multiple criteria basis, the following factors were taken into account:

(*a*) Academic achievement: any student must clearly be judged to be capable of handling the intellectual challenges inherent in medical education. The Faculty decided to consider for admission all those who had gained marks in the top 10% of school leavers or, as an approximate equivalent, those who had performed in tertiary studies at Credit level or better.

(*b*) Higher mental abilities: the Admissions Committee believed that they could identify certain intellectual characteristics, not necessarily showing a high correlation with past examination performance, which would be specifically related to the effective practice of medicine in the light of the programme objectives. The particular attributes were: creativity, intellectual curiosity, self-reliance in educational matters, flexible thinking and verbal ability, both written and oral.

(*c*) Personality characteristics: the Admissions Committee eliminated from its proposed list of selection criteria many of the personality characteristics advocated in the literature, in addition to many of those which, however praiseworthy they might seem in moral philosophical terms, seemed to have little or no relevance to this particular educational programme or to the subsequent practice of medicine. The final list comprised: a capacity for empathy, an ability to provide supportive, encouraging behaviour to someone under pressure, perseverance, flexibility of opinions and attitudes, the ability to deal with ethical problems in an informed, thoughtful and reasonably consistent way, tolerance of ambiguity (the need to reconcile intellectual curiosity with demands for practical action) and self-confidence in interpersonal relationships (the ability to establish purposeful professional relationships without being handicapped by excessive shyness or diffidence).

Space does not permit any detailed statement about the procedures which were employed to assess these characteristics and attributes. In essence, the procedure was carried out in three stages. First, from the total pool of 2250 applicants, those who satisfied the (relatively broad) criterion in relation to academic achievement were identified. Secondly, each of the academically eligible applicants was required to spend a full day on the campus: half of this was spent in familiarizing him or her with the most important features of the unusual programme, the other half in a complex series of tests aimed at the identification of some of the previously mentioned characteristics. Thirdly, those who received the highest scores in this programme of testing were then invited to return for a personal interview of 45 minutes duration, which was quite substantially structured and rated by objective criteria; each applicant was interviewed by a two-person team, one a full-time faculty member and one from the community. As a further refinement, it was resolved that each female applicant would meet an interview team containing at least one female member.

As can be imagined, this was a laborious, extremely time-consuming but ultimately, it is believed, very rewarding exercise. The first class of students shows, in addition to the high level of ability that would be expected, a remarkable and very attractive degree of heterogeneity and, at this very early stage, it is difficult to identify differences in academic performance between those admitted in the traditional way and those selected on the basis of multiple criteria. The Faculty is, in fact, comfortable with its new procedures and continues to use them for the selection of each new class of students. To date, no specific academic prerequisites have been demanded, thus departing very radically from the almost universal preoccupation, in the selection of students, with high levels of achievement in science and mathematics. The Faculty possesses data which indicate that such achievement is a great deal less relevant than is commonly assumed. It is, however, early days and much remains to be evaluated; further results are awaited with interest.

THE SELECTION OF STAFF MEMBERS

Consideration of the aims and objectives adopted by the medical school led to a series of decisions about the types of academic position that would need to be created and the approximate order in which to set about the task of recruiting the foundation professors. Perhaps this single fact most clearly identifies the school as being innovative in its approach to education.

In the first batch of foundation appointments, an associate professor of medical education was sought. There seemed not the slightest chance of building an appropriate educational programme without strong leadership from a distinguished educator, not only to provide stimulation and guidance in pedagogical matters but also to take responsibility for the development of the large amount of educational technology, and the very substantial quantity of learning materials, that would obviously be required for a programme of the type envisaged. To ensure his appropriate place in the Faculty framework he was identified, within the provisional organizational structure, as Chairman of the Division of Medical Education and Programme Evaluation.

Also sought, from the beginning, was a professor of behavioural science, whose skills, knowledge and influence would clearly be required if any practical sense was to be made out of the commitment to produce a graduate with a sophisticated understanding of social and community process who would also display a high level of sensitivity and skill in all matters pertaining to the doctor/patient relationship. In the event, a distinguished medical sociologist was recruited (and it is worth noting that it was under his leadership, as Chairman of the Admissions Committee, that the unusual admissions policy was developed and implemented; some might say that a medical graduate would not have had the courage).

The professor of community medicine was also sought in this first batch of academic appointments—in advance, it should be noted, of the search for a professor of medicine. A working paper went into considerable detail about the reasons underlying the decision to seek a clinical epidemiologist for this position, rather than a general practitioner, although the professor's responsibility includes, while it is not confined to, the development of educational programmes in general practice and other community locations.

Subsequent recruitment to foundation chairs has been of a slightly more traditional kind, although the somewhat unusual sequence was closely related to the educational priorities; for example, a professor of clinical pharmacology and a professor of psychiatry (both of whom have strongly developed community interests) were recruited at a comparatively early stage, in advance of the recruitment in paediatrics (a search which was in progress at the time of writing this paper), reproductive medicine and, most contentious of all, surgical science. Space does not permit development of the argument to justify each of these appointments and their temporal relationships; suffice it to say that the objectives themselves, and the educational programme which has flowed from them, have been the principal determinants.

A number of unusual appointments within the Division of Medical Education and Programme Evaluation warrant comment: in addition to appointments related to educational technology, medical photography and medical illustration, it has been found essential to incorporate an information officer, an instructional designer (an educationalist skilled in the preparation of learning materials for student use) and a lecturer in assessment and evaluation,[2] in line with the belief that the form of assessment and the skill and professionalism with which it is developed and administered will be crucial determinants of the student's approach to the learning task. Lest anyone should think that the school of medicine must be unusually well endowed to be able to afford such luxuries, as they are frequently described, it must be made very clear that the school operates almost entirely within conventional Australian medical school funding, which is far from lavish by the standards of the developed world, and that to set aside funds for these specifically educational appointments it has had to be accepted that the level of staffing within the more traditional medical school disciplines would be almost perilously low. This has been an explicit decision taken by the Faculty and, certainly, to date there has been no cause to regret it or to wish that things were otherwise.

The Faculty has, thus, adopted a deliberate and specific recruitment philosophy, aiming to attract staff members who will be in at least reasonable sympathy with the general aims of the school rather than to select a collection of individuals, however brilliant, who do not share the general orientation which has been evolved, who are in active opposition to it or—worst of all—are quite indifferent to anything other than the advancement of their own discipline. The founding professors are, in particular, individuals who accept, without significant reservations, the notion that the medical school should be locked firmly into its community—in the development of its education programme, in the selection of research projects, and in its involvement in direct clinical service. Those persons appointed to senior positions have clearly demonstrated, both by their past performance and in extended discussions at the time of their recruitment, that they accept the need for the school to adopt progressive educational and assessment strategies. It must be stressed, however, that these statements do not carry any implication that a less than critical view has been taken of the applicant's record in research and scholarship, and in no instance has an individual been selected who would be rejected on this criterion by a more traditional medical school.

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[2] This post is supported, for the time being, by the W. K. Kellogg Foundation.

It has also been striking to note the number of serious applicants who are so thoroughly disenchanted with the traditional organization of a medical school that they are prepared to embrace, by no means uncritically, the concept that a more flexible and more suitable administrative structure should be devised. This matter is taken up again in the closing section of this paper.

THE EDUCATIONAL STRATEGIES

Learning through the management and solution of clinical problems

The entire five-year curriculum is based on learning through the management and solution of clinical problems. Through the use of epidemiological data and a consensus of the views of experienced practitioners a list has been prepared of clinical problems which are serious (that is, life-threatening or potentially disabling in the widest sense—physically, mentally, economically, socially), common, or preventable. The selection of these problems for study will ensure that student learning is relevant to contemporary medical practice.

An example of such a problem is pain in the chest. In curriculum planning, consideration is given to conditions which cause pain in the chest, the presence of which a new graduate should be able to suspect or confirm or manage, either under supervision or by referral to another doctor or health professional.

One example of such a condition is myocardial infarction. The student uses the clinical problem of a patient with pain in the chest due to myocardial infarction to identify and acquire the knowledge, understanding, skills and attitudes required in order to manage a patient with this condition. Learning will include the biochemistry of cardiac muscle, the physiology of pain, the anatomy of the blood and nerve supply of the heart, the pathology of infarction, risk factors associated with myocardial infarction, epidemiology and prevention, physical examination, appropriate investigations, management of the patient, coping with the relatives, effects on the family, and community care and rehabilitation. The student integrates all these disciplines in the context of the specific clinical problem, learning being enhanced by the motivation which results from the clearly perceived relevance of the task. Thus, the basic sciences will not at any stage be learned as separate disciplines but will be studied and applied in a clinical context from the first to the last day of the course.

Five-year curriculum

The integrated five-year curriculum is divided into four phases. Phase I lasts ten weeks and is an introduction to the curriculum and to problem-solving. Phase II will occupy the rest of the first three years. It will be devoted to problems of the adult, system by system (e.g., respiratory problems) at first, and ending with multisystem problems (e.g., diabetes mellitus). Phase III will last one year and will consider problems of the newborn, children, adolescents and the aged, on the basis of the knowledge and skills acquired in coping with problems of the adult. Phase IV will occupy the final year and will be a form of intern or house officer traineeship, during which the students will undertake increasing responsibility for the management of patients of all ages, both in hospital and in the community. In the later part of the course there will be two elective periods, during which students will be able to study a subject of their choice in greater depth. There will also be the opportunity for them to undertake a year of research-oriented activity leading to the award of the degree of Bachelor of Medical Science.

Different levels of competence in dealing with different conditions

It is recognized that the new graduate will have to demonstrate different levels of competence in dealing with different conditions. For some conditions he will be expected to suspect the presence of the condition, to confirm it and to manage the patient under supervision; for others he will be expected to suspect and confirm the condition, but to refer the patient for management, or at least for specified aspects; for yet other conditions he will be required only to suspect the presence of the condition, and will refer for both confirmation and management. Lastly, there are many conditions which are so rare or specialized that they do not fall into any of these categories. In these instances, the student will be expected to apply his problem-solving skills to establish which system (e.g., cardiovascular) is involved, so that he can refer the patient appropriately. He will not be expected to know any details of the condition, which will be reserved for postgraduate study in the appropriate specialty. Decisions about the level of competence required are based on a consensus of the views of experienced practitioners.

Specification of the level of competence required of the student will indicate to him the limits of his own knowledge and will emphasize the need for postgraduate study and continuing education.

Students will be expected throughout the course to monitor and evaluate their own learning. They will be gradually led towards a progressive independence in their learning so that, by the time of graduation, the new graduate will be prepared to identify and satisfy his own educational needs during a lifetime of continuing study.

Individual or small-group learning

Students will learn as individuals or in small groups in order to develop independence and self-reliance as learners and to become effective at assessing their own performance as well as that of their colleagues. Small groups of eight students have been established, not only for learning through clinical problem-solving, but also for other strands of education: in clinical and management skills (e.g., interviewing, counselling and educating) as well as physical examination and treatment skills. These clinical skills will be built up progressively through the course and will be related as closely as possible to the clinical problems which the students are studying at the time. The initial emphasis is on the practical experience and analysis of human behaviour in the student group, before moving on to interaction with strangers and then with patients. The specific skills of clinical practice, e.g., physical examination and treatment skills, are to be learned and assessed in the clinical situation.

Tutors for these small-group activities include local doctors and other health professionals, who have required careful briefing and training. The involvement of local practitioners in curricular activities is not only a necessity, imposed by limited financial resources, but is also one of the bridges being deliberately built between the Faculty and the community.

Practice of medicine in the community

It was emphasized above that the programme objectives of the School include a major emphasis on the practice of medicine in the community. Students will receive a substantial part of their education in the local community: in general practitioners' surgeries, community health centres and other health and welfare agencies. It is also recognized that there is an important and neglected aspect of medical practice which does not relate to individual patients: group medicine. This includes epidemiological data gathering, the identification of health care needs and resources, meeting the needs of groups for health care, reducing the needs for such care, and assessing the process and outcome of health professional interventions. Graduates will be expected to be capable of promoting changes in health behaviour and health care delivery in the community.

Assessment of students

The assessment of students will be of two types: first, informal (formative) assessment will occur during learning, so that students can monitor their own progress. Secondly, assessment which demonstrates the student's fitness to proceed to the next stage (summative assessment) will occur towards the end of each ten-week term. Unsuccessful students will receive full diagnostic information concerning their deficiencies which will enable them to undertake remedial work before presenting themselves for re-assessment. This strategy will allow for different rates of learning and will encourage students to assume responsibility for their own education. Final certification of the student's fitness to practise, resulting in the conferment of the degree of Bachelor of Medicine (B.Med), will depend on his performance throughout phase IV, the final year.

Assessment will focus primarily on the ability to deal with clinical problems at an increasingly sophisticated level. At the same time, students will be expected to demonstrate that their decisions and actions are based on a sound knowledge and understanding of the medical sciences.

THE MANAGEMENT IMPLICATIONS

From the inception of the medical school there has been general agreement that the type of programme envisaged would be extremely difficult, if not impossible, to implement if the Faculty were to be organized along traditional departmental lines. Certainly, previous experience has led the author to the firm conviction that the classically rigid, inflexible departmentalization of faculties of medicine is probably the greatest single obstacle to educational reform. In the typical structure it is apparent that departmental heads exercise great power (albeit largely benevolent power) over "their own" staff, and control many aspects of their juniors' involvement with the educational process. Within this type of organization, departmental heads demand, by right, a specific allocation of hours within the curriculum and, equally strongly, the right to a precise allocation of space. Heads of departments within this model maintain an unrestricted right to access to the university administration so that, in the worst case, vital issues such as departmental staffing levels, the provision of major equipment and the utilization of space are all matters over which the faculty as a whole exercises no control. The result, inevitably, is a series of departmental operations in education and research, each of which might well have many attractive features in its own right, but which certainly are not welded together to produce a coherent faculty programme.

At the University of Newcastle, the problem has been that, whilst enthusiastic about the avoidance of such a traditional departmental structure, complete agreement has by no means been reached on the form of organization which should replace it. Major, far-reaching decisions have nevertheless been made: it is agreed, for instance, that the Faculty itself "owns" the curriculum and, with a few exceptions, "owns" the physical spaces within the buildings, thus permitting individuals to be grouped in innovative ways, categorically rejecting the usual practice of gathering, for example, all the physiologists into one area. It has further been agreed that budgetary control will be exercised by the Faculty through its various committees, not through the professors simply by virtue of their professorial rank. Financial resources are thus primarily disbursed through the Undergraduate Education Committee, the Research Committee, the Equipment Committee, the Library Committee and the Admissions Committee, all these committees being responsible, through their chairmen, to the Faculty Board. It is an important part of the strategy that these committees will slowly change their membership and will, at all times, comprise academic staff at various levels of seniority, including part-time staff members, together with a small representation from the student body.

Two further matters concerning organization are of major importance. First, in constructing the Faculty Board great care has been taken to ensure that this governing body is able to receive a significant input, not only from academic staff, but from members of the wider community—largely health professionals, it is true, but certainly selected in such a way as to include people who can take a critical view of the programmes and who are not prepared to concede that the academics are always right. Secondly, from the beginning, much time has been spent in building substantial bridges across to the local health services; wherever it is relevant, professors carry the additional responsibility of being principal advisers to the Regional Director of the local health services. While it is not wished to burden an already heavily committed academic with a major personal responsibility for the provision of health care, it is seen as being of fundamental importance that developments in education and research, on the one hand, and developments in the provision of health services for the community, on the other, must proceed in tandem, and that neither the Dean nor the Regional Director should plan new programmes in advance of full and frank discussion of each other's hopes and intentions.

CONCLUSION

In planning an innovative programme in medical education, it should not be forgotten that there are important, pre-existing constraints already operative within the system. Some of the most substantial of these are:

(*a*) The characteristics, attitudes and expectations of the parent university—the attitudes will at best be ambivalent, the characteristics may include an accretion of certain traditional academic practices which may be inimical to the development of innovative programmes.

(*b*) The attitudes and expectations of the local medical profession—here again ambivalence is the rule, and the best that can be hoped for is a distinct preponderance of positive, supportive feelings.

(*c*) The characteristics, existing qualities and attitudes of the local health services; a great deal more will be achieved by the medical school if it can be assured of the collaboration of the health authorities in such matters as the appropriate provision of joint faculty/health service appointments and the strengthening of particular areas of health care without which the faculty's programmes will be seriously hampered or, in the worst case, rendered almost totally ineffective.

Moreover, the graduates, however different they may be, must be acceptable throughout the medical world. Care must be taken not to cross the fine line dividing innovation from eccentricity. An innovator cannot altogether lose sight of the fact that a medical school must, for better or worse, retain its "respectability" if it is not to lose its credibility in the community and if it is to maintain the reasonably benevolent support of governmental funding authorities, without which it would go to the wall overnight. The Medical School at the University of Newcastle is part of the international network of medical schools. It would be impossible and indeed immoral, for example, to recruit a promising young academic unless he could be sure that, when he wanted to move on to higher things at some future date, his experience at Newcastle would have added lustre to his reputation and significantly advanced his career development.

Flexibility must be the key word, for in these extraordinary times it is true to say that change is the only constant. Innovation is certainly not viable without a secure base of support, for a wide range of forces bear down in an attempt to induce what has been called a "regression to the mean"; the maintenance of defensible differences and avoidance of stultifying conformity are tasks which cannot be accomplished by a small band of dedicated medical academics on their own.

CHAPTER 2

UNIVERSIDAD DEL VALLE, CALI, COLOMBIA:

DENTAL MANPOWER TRAINING

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EDITORIAL NOTE

In creating the Dental School in Cali, the founders were guided by one principle, namely, that their School should train the numbers and types of dental health personnel that would have maximum impact for the region round about Cali. Since most of the dental problems consisted of caries and periodontal disease, many of the skills of traditionally-trained professional dentists remained unused. At the same time, many people never received any help, and little preventive dentistry was being done.

Concerned to provide community-oriented training, the Dental School is placing a strong emphasis on social dentistry and is training dentists as managers of a dental team.

The Dental School has also been training the other members of the team, auxiliary dental nurses and dental hygienists, who are responsible for community preventive and curative work, especially in schools. They also train auxiliaries in prosthetics to work with dentists.

The involvement in the dental health services of the region, which has strong government backing, has provided opportunities for practical training for students, for research into the optimal manpower composition of dental teams, and also for the development and testing of new, cheap and simplified dental equipment. The school has also become very active in developing continuing education programmes for dental workers in the field.

The importance of mutual commitment and suitable organization of the university and the regional health authorities for the success of integrated health services and manpower development is demonstrated by the achievements of this programme compared with the failure of an earlier attempt in 1962 to train and deploy auxiliary dental nurses.

BRIEF DESCRIPTION OF COLOMBIA

Colombia is a country of approximately 1 100 000 km^2, located on the north corner of South America, a few degrees north of the equator, with coasts on both the Atlantic and Pacific Oceans. Most of its 25 million people live in the central and western part of the country in the mountainous region which is part of the Andes system. Internal migration from the countryside to the towns has been very heavy and the four major cities, Bogotá (the capital), Cali, Medellin and Barranquilla, have experienced rates of growth of about 6 % per year for the past several years.

The rate of growth of the population, which was above 3 % per year in 1965, has declined rapidly in the last few years and is currently between 2 % and 2.2 % per year. As a consequence of the high birth rates experienced for many years, persons below 15 years of age comprise approximately 50 % of the population. Despite a long effort towards industrialization, the Colombian economy is predominantly based on agriculture. The mean annual per capita income is around US $500.

Fifteen per cent of Colombians can afford private health services; approximately 10 % are members of the Social Insurance Fund, a prepaid health insurance system that is compulsory for all employed workers. Another 5 % of the population is covered through different health care systems such as those for workers in the Public Works ministry, for the military, etc. The remaining 70 % of the population rely on the network of hospitals and health centres organized by the Health Ministry. Health services provided by the Health Ministry are organized according to regions. At the rural level, health posts are staffed by one or two health promoters and services reach increasing levels of complexity at the health centre, local and regional hospitals. At the top of this pyramidal system there are nine university hospitals.

In an effort to increase coverage, the ten-year health plan has adopted the use of health promoters and nurse auxiliaries to perform a variety of specific tasks at all levels of the health system; this includes the use of nurse auxiliaries for dental work.

In 1975, there were approximately 12 500 physicians in the country, 75 % working in the capital cities. Thus, although the national ratio of physicians per 1000 population is about 0.5, the ratio in urban areas is one per 1000 and the ratio in rural areas is one per 7000. There were, in the same year, 3000 dentists (approximately 1.3 for every 10 000 population) and 2500 nurses of professional level (approximately 1 for every 10 000 population). Dentists and nurses show the same maldistribution as physicians, i.e., they tend to be concentrated in urban areas. In 1975, there were 25 000 auxiliary nurses (1 for every 1000 people) and 3000 health promoters, this last group working almost exclusively in rural areas.

Most medical schools in Colombia are integrated into larger academic entities which, as a rule, include dentistry, nursing and allied health sciences units. Until recently, the country had nine such entities, each with its medical school. Two of these schools are private and seven government funded. In the last three years a sudden and unexpected proliferation of medical schools, all private, has taken place. There are six new schools of this type and they offer only programmes in medicine.

UNIVERSIDAD DEL VALLE

The Universidad del Valle is a state university financed almost exclusively with government funds from the central and state levels. It was established in 1945 and at present has six divisions (education, engineering, humanities, arts and sciences, economics and health).

In 1951, a medical school was established in the Universidad del Valle to which, in 1958, was added the nursing school. In 1968, a major reorganization took place and the Health Division was created offering, in addition to the medical and nursing programmes, courses for laboratory technicians and physiotherapists. In 1974, the dental programme was started. The Health Division of Universidad del Valle now offers academic programmes at different levels, ranging from the undergraduate to the postgraduate, in the various basic and clinical sciences.

Total enrolment for the Health Division is around 1500 students. Entering classes for the medical, nursing and dental programmes are of 120, 40 and 50, respectively. The Universidad del Valle has a more strict admissions policy than most other universities in Colombia, while none of the Colombian universities has an automatic admissions policy for those graduating from high school although this is frequently the case in other Latin-American countries.

Compared with other similar institutions in Colombia, the Universidad del Valle has a higher proportion of full-time staff, and its programmes have been considered stronger in basic sciences and in community medicine.

One of the philosophical principles guiding the Universidad del Valle and, in particular, the Health Division is that education is not an end in itself but a means to improve the situation in the country and region. It is assumed that the University cannot be passive in relation to the characteristics of the system in which its alumini are going to practise. As a consequence, very strong ties with the health care delivery system have been developed. Curricular changes and programmes are made frequently to meet the demands of the health system. At the same time, intensive research programmes are being carried out by the Universidad del Valle on how to improve the quality and coverage of services in areas such as obstetrics, pediatrics, mental health and surgery. Undergraduate education utilizes the existing network of health facilities and is not restricted to the university hospital.

Another guiding principle of the Health Division of the Universidad del Valle has been that it must train all the necessary categories of manpower needed to improve the health of the country and region. As a consequence, the Health Division has, at different times, started programmes to train technical workers such as rural midwives, health promoters and auxiliary nurses for different specific tasks, in addition to the more traditional academic careers. As a rule, the University offers these programmes only when other health agencies do not assume responsibility for them.

CREATION OF THE DEPARTMENT OF STOMATOLOGY

Dental problems are very frequent in Colombia. According to the National Morbidity Study, approximately 90 % of the population has caries and 88 % has periodontal disease; in addition, 88 % of the population older than 15 years is in need of some type of dental prothesis. Dental attention is, however, poor. According to the same study, 43.5 % of Colombians were reported to have some dental problem but only half of them had sought any dental attention in the preceding year, and 40 % had never received any attention at all.

In 1972, there were 3000 dentists in Colombia, the majority of whom were practising in major urban centres. The four existing dental schools at that time were graduating approximately 150 new dentists per year. Most of these schools offered a more or less conventional programme of five years' duration.

Preliminary studies indicated that the quality of dental practice was poor and that most dentists were engaged in routine operating procedures, making little use of the professional skills acquired at university level. Furthermore, continued self-education was practically nonexistent. It was clear that the opening of a new dental school, even one with a moderately large entering class, could not provide the answer to the dental manpower requirements of the country or even of one region. The Health Division of Universidad del Valle had long considered the creation of a Department of Stomatology, through which it could offer different dental programmes. Several difficulties, including the cost of the initial equipment (dental units and chairs), had made this impossible.

Around 1962, a programme to train auxiliary nurses in dental care had been carried out in the Department of Social Medicine. Although it was successful as far as the performance of the auxiliary nurses was concerned, the programme never obtained enough university or governmental support to ensure its continuity. This pilot experience, however, was of great value in the creation of the Department of Stomatology in 1974.

In 1973, the Health Division of Universidad del Valle again began to explore the possibility of creating a Department of Stomatology. After considerable discussion the University approved the creation of the Department. Of no small importance in taking this decision was the possibility of obtaining the necessary equipment at a very low cost, thanks to the simplified dental units developed jointly by the WHO Regional Office for the Americas and Universidad del Valle. A more detailed description of this simplified unit is given below.

In addition to the undergraduate level, the department was to engage in the training of health auxiliaries, prothesis technicians and in continued education for existing professionals. Postgraduate programmes were to be added later.

The emphasis of the new programmes was on a community approach in which newer and innovative models of dental care delivery were to be investigated and tested. Increased productivity of professionals together with delegation of specific procedures to lower level personnel were considered essential in this new effort.

CURRICULA OF DIFFERENT PROGRAMMES

A brief description of each programme is presented here. The following is not intended to be a comprehensive syllabus but rather a summary of the more important and innovative characteristics of each programme.

Undergraduate programme in dentistry

This programme is open to high-school graduates. A selection of applicants is made on the basis of a written admission examination. Those obtaining pass marks undergo a manual dexterity test. The programme at present admits 50 new students per year.

It lasts eight semesters (5520 hours) during which the students are trained in three broad areas: biological, clinical and social stomatology. The first area is intended to give all basic biological information and is presented in an integrated fashion following the well-known agent, host and environment scheme. In the clinical area, students develop the necessary skills to perform the different clinical work required. The social area aims to provide basic knowledge about the community and its organization, as well as about the relationship between the community and the ways of practising the profession. In addition, the basic tools for community diagnosis, biostatistics and epidemiology are taught in this area.

The development of these three areas is simultaneous during the eight semesters and students are therefore exposed to all three areas in the first year. There is gradual development in each area. For example, in the first year the clinical area deals with the study of dental equipment (chair, unit, x-ray etc.), clinical examination and interviewing, preventive techniques and basic gnathologic procedures. Similarly, the biological area starts with the study of the cell and its biochemical and biophysical principles. At a later stage (second, third and fourth years), tissues and systems and their regulatory mechanisms are studied. In the social area, students are initially exposed to some basic socio-anthropological concepts, health care delivery systems in different countries and the Colombian Health Plan. Later, they develop basic epidemiologic and administrative skills. In total, the clinical area absorbs 2920 hours (53 %), the biological area 1360 hours (25 %) and the social area 1240 hours (22 %) of the programme.

Dental care facilities of the city of Cali (part of the Health Ministry network) and the Seguros Sociales (health insurance for workers) are utilized for teaching purposes from early in the academic programme. Separate agreements have been made with the corresponding institutions so that students can practise and study the conditions of practice in environments differing from that of the University.

The first class entered in 1975 and has not yet finished the programme. It is, thus, too early to evaluate the final results of this academic scheme. More conventional evaluation, however, such as the percentage of drop-outs, the percentage of students obtaining successful marks etc., as well as student acceptance indicate that the programme is accomplishing its goals.

Auxiliary nurses in dental care

The programme on auxiliary nursing in social dentistry has its origins in the pilot programme, mentioned above, which was carried out in 1962 under the sponsorship of the Health Ministry to train auxiliary nurses to perform dental care (extractions and filling of cavities) in rural areas. Several difficulties led to the discontinuation of this pilot programme, including: the lack of legal status permitting the new type of personnel to work; the creation of but few jobs within the health system, despite the sponsorship of the programme by the Health Ministry, with the result that only a few auxiliary nurses could practise in the expected conditions; and the strong feeling of discomfort and hostility exhibited by dental professionals who viewed this new type of the practitioner as low-quality personnel. The tremendous success of the few auxiliaries who went into practice in rural areas, however, led the Ministry to approve the programme several years later.

As it now stands, the Universidad del Valle trains auxiliary nurses under a contract with the Health Ministry which employs them immediately after they finish the programme. Selection of students is made by the Health Ministry and the Universidad del Valle. Candidates are chosen among residents of the area in which the auxiliary nurse is going to practise. Four years of high school (in Colombia, high school is six years) and a minimum age of 17 are required. Each year, 25 students are admitted. The programme has a four-semester duration (a total of 2800 hours). The basic goal is to enable the auxiliary nurse to carry out preventive as well as curative measures, particularly for school and preschool children, under periodical professional supervision. The first two semesters involve theoretical and practical work done at the university. The last two semesters are spent under professional supervision in a community of similar characteristics to the one where the nurse is going to practise. The academic programme consists of three areas: clinical, biological and social dentistry, developed simultaneously during the first two semesters. Evaluation of theoretical knowledge and practical skills is carried out at the end of the university part of the programme. Practical skills are again evaluated at the end of the second year.

The Health Ministry has a similar contract with the Universidad de Antioquia. The goal is to train the 380 auxiliaries that are needed in the health system to work at the local (rural) level, by 1980.

Auxiliary nurses in dental hygiene

According to the Colombian Health Ministry, 400 dental hygienists are needed in the country. The Universidad del Valle has designed a programme to train dental hygienists to work with the Health Ministry, but they also can work with a private practitioner as assistants. This is the first programme of its kind to exist in the country; previously, dental hygienists or dental office assistants had been individually trained without a structured programme.

The purpose of the programme is to train a dental hygienist-assistant who can perform primary prevention for dental caries and periodontal disease, mainly in schoolchildren, but at the same time can provide community education. In private practice, the auxiliary nurse is also expected to help in the administration of the office.

Admission requirements are similar to those for the programme in social dentistry, that is, four years of high school and at least 17 years of age. The programme lasts two semesters (1200 hours in total). Forty-five students are admitted each year. During the first semester, they follow a similar course to that followed by auxiliaries in social dentistry, in which they receive theoretical and practical training. The second semester is fundamentally practical, under supervision. The courses include the topical application of fluorides, the cleaning of teeth, principles of communication and other topics such as maintenance of the equipment and elementary accounting.

This programme is also sponsored by the Health Ministry which collaborates in the selection of candidates. Private practitioners may also send their auxiliaries for training but must pay the cost of the programme.

Auxiliaries in dental prothesis

There are no schools for prothesis technicians in Colombia. The few existing laboratories are private and beyond the means of the majority of the population. Yet, as mentioned above, 88 % of the Colombian population of 15 years of age or older is in need of some dental prothesis. The Department of Stomatology has taken preliminary steps to establish a programme for this new type of manpower personnel, to start in 1979. Agreements with governmental institutions are being finalized. Admission requirements and curricular specifications are not yet completed.

Continued education for dentists and auxiliaries

There is one unit within the Department of Stomatology in charge of organizing continued education at the graduate and technical level. The purpose of these activities is to upgrade the quality of practice and to increase the productivity of existing general practitioners.

The programme is financed by contributions from the Health Ministry, the Social Insurance Fund and fees paid by private practitioners. It is designed to cover the south-western region of Colombia.

Courses conducted in 1978 have included the following topics: surgical complications in general dental practice; physical diagnosis and oral pathology; simplified techniques in general dentistry; orthodontics in general practice; the child patient, principles for prevention and treatment; pharmacology in general practice; new dental materials; and four-hands dentistry (patient management by the dentist and the assistant together at the chair).

All of these courses have taken place outside the city of Cali and most have been presented several times in different places to facilitate the attendance of the practitioners. The duration of courses is normally three days, and practical activities frequently are scheduled for weekends and holidays. The courses are announced several months in advance so that interested dentists have the time to make the necessary arrangements.

PHYSICAL FACILITIES FOR THE DEPARTMENT OF STOMATOLOGY; SIMPLIFIED EQUIPMENT

In Colombia, the cost of a dental unit (dental cabinet, chair and lamp) plus the essential minor equipment is around US $10000–15000. A university about to start a dental programme may need from 30 to 50 units for the clinics. The cost is, thus, in excess of half a million US dollars, not including the physical facilities, and is likely to be beyond the financial capabilities of universities in developing countries. This financial consideration retarded the beginning of the programme at the Universidad del Valle for several years. Fortunately, in association with the Pan American Health Organization, the Universidad del Valle has succeeded in developing a simplified unit at a considerably lower cost.[1]

The dental unit consists of a cabinet which has a high-speed drill, driven by air. A small motor provides the air for driving the drill and forcing water or air through a multiple-use syringe. Parts can be transported in a small briefcase and the whole can be attached to a car engine to form a mobile unit or can be assembled into a more permanent one, as shown in Fig. 1. A low-speed air drill was added to the unit for use in cleaning teeth as well as in finishing work. This low-speed drill is considered of great importance, particularly in a teaching environment. Fig. 1 shows the unit as assembled in the clinics in Universidad del Valle. A central air compressor was installed to drive the existing 36 units.

A fixed-position chair of anatomical design was built by the Division of Engineering of Universidad del Valle. The chair can be adjusted to the height of the dentist but has no other adjustable positions.

So far, commercially available lamps have been used. A simplified low-cost model is, however, being tested at the University and it is hoped that it will soon be available.

The most important advantages of the simplified units are the availability of materials and the reduction in cost. With the exception of the high- and low-speed drills, which have to be imported and are still somewhat expensive, the materials are easily available. Small air compressors are in common use for other purposes (painting, for example) and can be employed for dentistry. The materials for the chair are also easily obtainable. The cost of the simplified units is considerably lower than that of commercially available units. The basic kit, including the high-speed drill, costs around US $250; the low-speed drill is about the same price. The rest of the materials, including the air compressor and labour charges, cost in Colombia around US $1000. In many other countries the cost may be lower. The total cost is therefore approximately US $1500, i.e. $\frac{1}{8}$th to $\frac{1}{10}$th of the cost of commercially available units.

A method of financing young dentists is being studied. Under the proposed scheme, dental students would receive a loan to buy the necessary equipment while still at the University. They would then pay back the money when they become productive. This would ease the financial burden of establishing a practice and, it is hoped, reduce the price of dental services.

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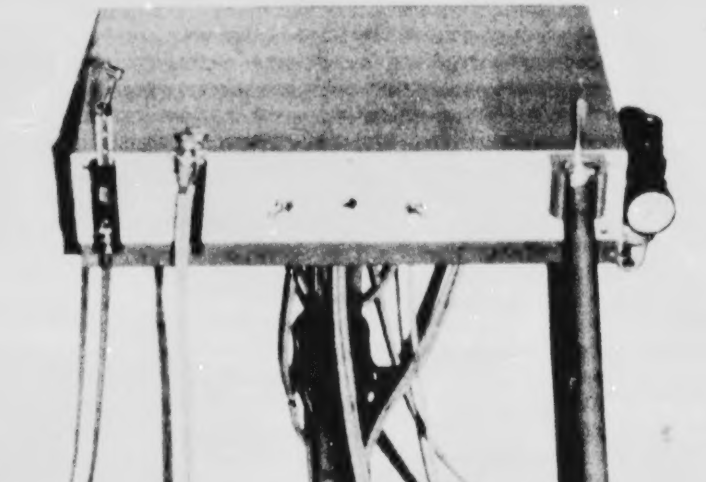
[1] Only a brief description of the unit is given here. More details may be obtained from the Department of Stomatology, Universidad del Valle, Division de Salud, Apartado Aereo 2188, Cali, Colombia.

FIG 1 THE SIMPLIFIED DENTAL UNIT



RESEARCH IN NEWER AND MORE PRODUCTIVE APPLIED MODELS OF DENTAL CARE DELIVERY

The traditional model of dental care delivery consists of one dentist with one assistant and one dental chair; it is still the most widely used model in Colombia. Such a model could not, however, meet the dental care needs of the country. Preliminary studies have indicated that more productive models, such as the four-hands model, would still not be sufficient. The Universidad del Valle has therefore started an ambitious research project to test different models for productivity, cost and quality of care.

Under the present research programme, the traditional model (one dentist and one dental assistant) is being compared with: first, one dentist, two auxiliary nurses in social dentistry and three dental assistants-hygienists; secondly, four dentists, four auxiliary nurses and seven dental assistants-hygienists; thirdly, one dentist, six auxiliary nurses and ten dental assistants-hygienists; and fourthly, one dentist, eight auxiliary nurses and thirteen dental assistants-hygienists. The models are being tested on school-age children. The final results of this research project should indicate which is the optimal manpower configuration in relation to the three parameters: productivity, cost and quality of care. It is expected that the results of this investigation will be utilized by the Health Ministry and the Social Insurance Fund, and the necessary steps have been taken to ensure the participation of these institutions in the research design.

CHAPTER 3

UNIVERSITY OF KUOPIO, FINLAND:

REFORMS OF THE HEALTH CARE SYSTEM IN FINLAND— A CHALLENGE FOR A NEW UNIVERSITY

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EDITORIAL NOTE

Faced with an overall and especially a regional shortage of medical manpower, the Finnish Government founded the Medical School at the University of Kuopio to rectify this situation in eastern Finland. The need to supply appropriately-trained doctors to man the expanding community health centre system meant that a different kind of doctor was required from the one previously produced to supply the hospital system with specialists.

This article describes how a task analysis of a health-centre physician and an analysis of the most prevalent health problems were used to draw up training objectives for the students, and in the design of appropriate training experiences in some of the local health centres.

All the curricula taught in the University are "competency-based". Institutional and intermediate objectives were identified by curricula committees, and as a result a core curriculum for several kinds of health personnel is now being taught. Integrated teaching of different disciplines is practised at all stages, and the faculty is organized accordingly.

Evaluations are made of the courses, the teachers and the students, and feedback mechanisms have been established with participation of all levels of faculty and of the students represented in the control bodies.

Training seminars have been provided in the health centres for both permanent faculty and part-time teachers to explain the programmes and the methodology, and all have been drawn into the planning of their particular contributions to the syllabuses.

The author stresses the importance of having the staff and the time to make this kind of programme feasible.

Finland is a country with about 4.7 million inhabitants. During the past 15 to 20 years, there has been a large migration of people from the countryside to the cities and towns; a predominantly agrarian society has experienced a transition to an industrial one. Thus people from northern and eastern Finland, in particular, have migrated to the southern, more affluent, part of the country. This process started in the 1950s, but reached a peak at the end of the 1960s and in the early 1970s.

Another factor which increasingly influenced the developmental capacity of different areas of the country was the location of all the institutions of higher education in Helsinki and Turku in southern Finland. Young people from the north and east had little chance of getting into these universities, and those who did manage to get accepted and graduate, in most cases, were offered good positions in the south, thus making their contribution in what was already the wealthiest part of the country. This situation was anticipated in the early 1950s and plans were made to open up universities in other parts of the country. In each case, there was strong public opposition stirred up by representatives of the older universities.

The first plan was accepted in 1958 when Parliament passed the Act of the University of Oulu. This new university was to teach humanities and medical, natural, and technical sciences to meet the needs of northern Finland. Subsequently, universities were also started in Tampere and in Jyväskylä.

In the mid-1960s eastern Finland remained the largest region with no institution of higher education, and still had the highest rate of emigration. Many cities in the region wanted to be the site of the new university, and a heated debate ensued. Finally a settlement was reached whereby the university was to be divided among three cities. Each part was to be administratively autonomous but they were each to have a different set of disciplines. The technical university was founded in Lappeeranta, that concentrating on the humanities and education was located in Joensuu, while the third, in Kuopio, was to be responsible for health sciences. Separate Acts of Parliament were passed for these universities on 25 March 1966.

HEALTH CARE POLICY IN FINLAND

Organization of health care

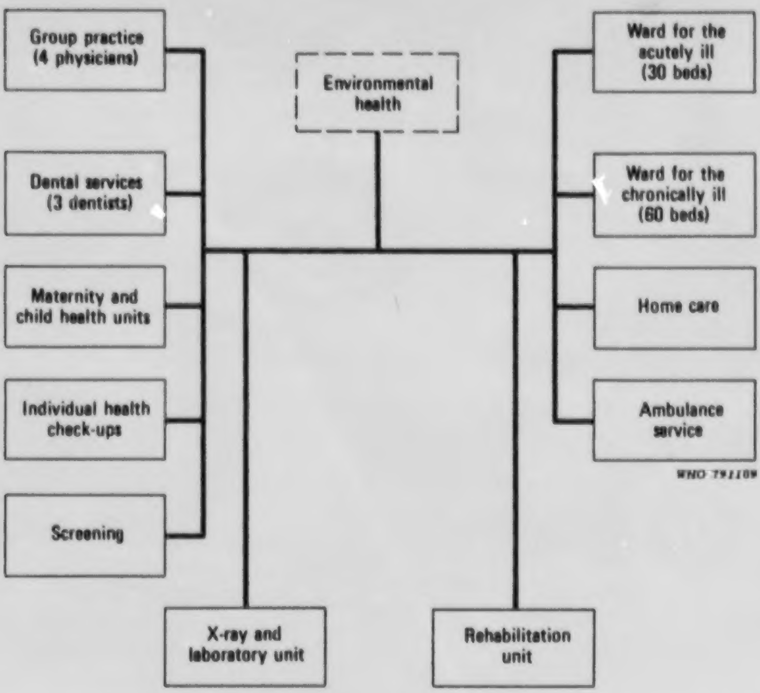
Overall organization of health care in Finland is the responsibility of the Ministry of Social Affairs and Health. This has three national boards responsible for health services, social welfare, and labour, respectively. The provincial governments of each of the twelve provinces also include departments of social affairs and health responsible for all related activities in their provinces.

The provinces are subdivided into communities and municipalities which have their local government councils. Although the councils may represent either large cities or small rural units, the organization of health care administration is basically the same in each, and is divided into two main activities, personal health care through health centres and environmental health.

The personal health care system in Finland is organized on three levels. The first level is the community health centre, a service unit responsible for the whole spectrum of primary health care activities. A model centre is intended to serve a population of between 10 000 and 15 000 people, and to be manned by four doctors, three dentists and auxiliary staff (see Fig. 1). These health centres are owned and administered by the communities they serve, although they may receive State subsidies ranging from 39 % to 70 % according to the economic state of the community.

The second level of care is provided by a system of regional hospitals. These normally consist of three or four specialist-directed services (internal medicine, surgery, obstetrics and gynaecology, and pediatrics) which are able to manage most of the common diseases in these specialities. The third level of care is provided by a network of 20 central hospitals. These have staff and facilities for more specialized care, and include in their number the university teaching hospitals. Support and administration of each of these hospitals is by a federation of the communities which they serve in proportion to the size of those communities. One third of the university central hospitals is owned by the State, and they also receive an extra 10 % from the Government to cover the extra costs of equipment and personnel and for the provision of special services to larger regions. Private hospitals play only a minor role in the Finnish Health Care System.

FIG. 1. SERVICE UNITS IN A HEALTH CENTRE FOR 10 000 TO 15 000 POPULATION


Group practice (4 physicians)
Environmental health
Ward for the acutely ill (30 beds)
Dental services (3 dentists)
Ward for the chronically ill (60 beds)
Maternity and child health units
Home care
Individual health check-ups
Ambulance service
WHO 791109
Screening
X-ray and laboratory unit
Rehabilitation unit

Until 1950, hospital services were offered by State-owned provincial hospitals, some private hospitals, and a few community hospitals. At that time the Government passed an Act which led to the construction of 18 central hospitals (Helsinki and Turku already had their teaching hospitals), a considerable expansion of the hospital services. The community health centre system is new, and has been under construction only since the passing of the 1972 Public Health Act. It represents a new priority in the Government's health policy.

The training of physicians

Until 1947, medical studies could be pursued only at the University of Helsinki. After that year, clinical studies commenced at Turku. However, the full medical course has been taught there only since 1954. The annual intake of medical students at that time was about 150.

The great expansion of the hospital system in the 1950s led to an increased demand for doctors which these two medical faculties simply could not meet. Furthermore, it soon became apparent that the area suffering most from shortage of doctors was that farthest from the university, northern Finland. It was natural, therefore, that when a new university was planned for Oulu, it should include a medical faculty.

During the 1960s a large number of Finnish students pursued their medical studies abroad, but still the number of graduating physicians was inadequate to meet the needs of the enlarged health care and hospital system. The recruitment of students to the University of Oulu from northern Finland, and their subsequent settling to work in this area after graduation did, however, substantiate the expectation that regional manpower problems could be significantly solved by decentralizing the educational system. This was the reason why medical training was also included in the programme for the University of Eastern Finland. The location of the medical school was partially determined by the existence of a large central hospital in Kuopio, and the first medical students were recruited in 1972. Simultaneously, a fifth medical school started at the University of Tampere. These two new units had student intakes of about 100 each, bringing the total annual intake of medical students in Finland to 620.

At the end of 1976, the number of physicians in Finland was 7375, giving a physician-to-population ratio of 1 to 670. The distribution of physicians is still uneven, but is expected to improve with the output from Kuopio and Tampere. The substantial increase in the number of physicians expected during the next 20 years should raise the physician-to-population ratio to 1 to 270–300 by the end of the century, an estimate which has led to heated debate about the demand for and the optimal number of physicians.

Employment of physicians

With the rapid development of the hospital system since 1950, a majority of the medical graduates have been attracted into clinical specialization in the hospitals. This attraction was obviously reinforced by the fact that the medical studies took place almost exclusively in the most advanced and sophisticated university central hospitals, where the importance of community health and primary care was not given much consideration. As a result it became increasingly difficult to recruit young physicians into primary care vacancies in the communities. The worst affected have been the communities farthest from the hospitals, which offered few social benefits to the physicians. About half of the physicians have gone into clinical specialities, and in 1975 only 17% (1264) were employed in the health centres. This number was, in fact, double that of six years previously on account of the emphasis given to primary care in national health policy.

The increasing cost of medical care has been one reason for the new emphasis on primary health care. It is intended that the health centres and their wards should be responsible for treatment of all the common diseases, and that the more expensive regional and central hospitals should be kept for problem cases. Government regulation will continue to redistribute the balance of health manpower and it is expected that the health centres' share will have increased to 30% by 1982.

New priorities for medical education

The health care system and the education of medical manpower in Finland are the responsibilities of different government agencies, the Ministry of Social Affairs and Health, and the Ministry of Education. Any changes in the plans and priorities of the health care system, therefore, inevitably take a long time to be reflected in training curricula. This has been very true of the changed emphasis on community health and primary care. However, in the medical schools of Kuopio and Tampere, started after the change in emphasis, the difficulty has been avoided as a consequence of corresponding changes in attitude, and also through reinforcement of the numbers of teaching staff in community health.

Very few of the new ideas in health care delivery have been incorporated into the conventional training programmes at the older faculties of Helsinki and Turku or even at Oulu. In the new universities of Kuopio and Tampere, the need to train an increasing number of young physicians to work in health centres has led to the inclusion within the curriculum of practical training experiences. During visits to health centres, students can familiarize themselves with the teamwork of health care, the special arrangements necessary for preventive medicine, for health education, and for rehabilitation, the difficulties in the management of patients with chronic illness, problems of occupational medicine, etc. They are also made familiar with the extensive planning and administrative duties of the health worker. None of these matters can be taught within the context of a highly specialized teaching hospital. In spite of the difficulties of organizing health centre training due to the separation of the health care and educational administrations, the results gained so far have been very encouraging.

THE UNIVERSITY OF KUOPIO

Objectives

In passing the Act establishing the University of Kuopio, Parliament wanted to achieve three major goals:

(*a*) To alleviate the general shortage of medical manpower;

(*b*) To balance the geographical distribution of medical manpower in favour of eastern Finland; and

(*c*) To emphasize the importance of primary care and to increase the supply of qualified manpower for this sector.

In 1966, a Planning Committee was appointed for the University with the responsibility of outlining the future curricula, defining the administrative structure and deciding upon the site. The Committee was chaired by the Director General of the National Board of Health. In 1969, the final report of the Planning Committee was submitted and its results were included in the Act on the Activities of the University of Kuopio, passed in 1970. The new University was to educate students for different branches of the health sciences, including medicine, dentistry and related natural sciences. The University was also to include a Research Centre for Public Health, to concentrate on problems of major disease groups in Finland and, especially, in the eastern part of the country.

Later, the scope of the University was enlarged to cover pharmacy, environmental sciences and social sciences. These subjects all gain from being taught in conjunction with other health-related subjects. Further progress in this respect will be achieved if the University can incorporate a veterinary school and nutritional education into its programme, as has been suggested by a government committee.

The main criterion for the inclusion of new disciplines in the teaching programme and for creating new academic degrees is their contribution and relevance to solving health problems. The University currently offers teaching and degrees in the following fields: medicine, dentistry, pharmacy, nursing, environmental hygiene, medical physics and clinical chemistry. Plans to initiate teaching in nutrition and health-related social sciences are pending.

The main objectives of the University are:

(*a*) To develop a comprehensive programme for the education of different kinds of health care personnel;

(*b*) To educate teams at the academic and vocational level for the health care system;

(*c*) To educate and train specialists in community health care and to develop community health care services;

(*d*) To integrate medical sciences, natural sciences and social sciences in education and research; and

(*e*) To provide health education to the community as a whole with the aid of mass media as an intervention and research project.

A close working relationship has been created between the University and local vocational schools to train dental therapists, lower diploma students in pharmacy, physical and occupational therapists (with the Nursing Institute of Kuopio) as well as optometrists and dental technicians (with the Technical Institute of Kuopio).

By providing educational possibilities for students in eastern Finland, the University encourages them to stay permanently in the area. This, in turn, secures better health care services for the population and, in addition, provides new occupational possibilities and activities. Economic revival and self-confidence are of special importance for the future of the whole area.

Administrative structure

After the Planning Committee completed its work in 1969, a Preparatory Committee of three professors started to outline the details of the University administration. The University of Kuopio is subject to State control, like most Finnish universities. When the University started its activity in September 1972, the only administrative body was the University Board with 11 members. It was formed on a tripie-based representation: one third (three members) were professors, one third were other teachers and personnel and one third were students elected by their respective groups. The Board was chaired by the rector, who together with the vice-rector were *ex-officio* members.

In 1974, the University was given a new statute which organized its administration at three levels. The University Senate with 24 members elected on triple-based representation forms the highest decision-making body of the University with the obligation of confirming statutes, regulations and orders concerning the whole University, accepting the proposals for the annual University budget and the five-year plans as well as of electing the rector, vice-rector, the directors of the department boards and the members of the University Board. The second level, the University Board, remained unchanged and has the responsibility of dealing with the appointments of teaching personnel (except the professors who are appointed by the President of the Republic), confirmation of degrees in different subjects and preparation of official matters for referral to the University Senate. The third level is composed of department boards, formed by a director and 6, 9 or 12 members on triple-based representation. The matters dealt with at department board meetings are closely related to the details of teaching and research carried out within the department.

Traditionally, the universities in Finland are divided into faculties with strict boundaries. In Kuopio, the faculty system was abandoned and the University was divided into smaller departments in order to remove the unnecessary barriers between disciplines. The whole University will eventually have the following nine departments: general biology, theoretical clinical sciences, clinical medicine, community health, social sciences, dentistry, pharmacy, environmental hygiene as well as mathematics, physics and chemistry (see Fig. 2). Since the University is still small in size, only the first five departments have boards in operation and these take care of the matters of the missing boards.

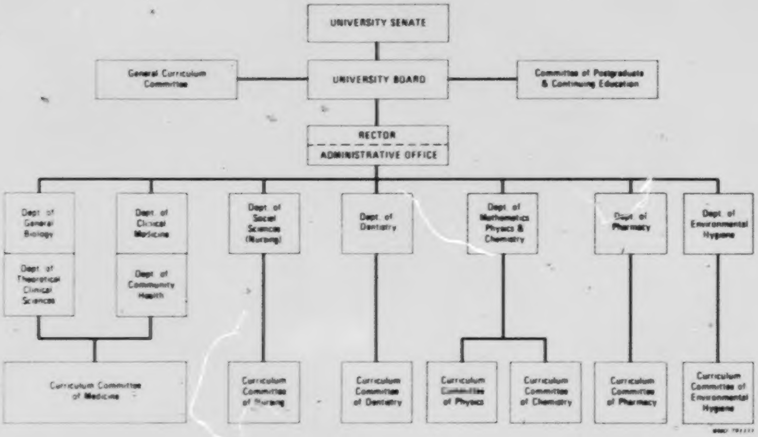
In the final state four departments will be mainly responsible for the medical curriculum, with additional contributions being made by teachers from other departments and *vice versa*. The traditional preclinical subjects—anatomy, physiology and medical chemistry—are incorporated in the Department of General Biology, whereas clinical microbiology, clinical chemistry, clinical physiology, diagnostic radiology, forensic medicine, pathology and pharmacology are included in the Department of Theoretical Clinical Sciences.

The Department of Clinical Medicine incorporates all those subjects concerned with patient care in the wards. The Department of Community Health teaches topics related to community medicine and primary care. It covers the following subjects: medical sociology, medical psychology, computer sciences, epidemiology, biostatistics, medical care organization, medical economics, social security, preventive medicine, occupational health, international health, and health education.

Since curricula are formed of courses in which teachers from different departments are cooperating, each curriculum has a body which has the responsibility of evaluating learning and teaching as well as of making suggestions to the department boards for adjustments and innovation. At present the University has seven curriculum committees (see Fig. 2) which act in an advisory capacity to the departments. The curriculum committees are formed half of teachers participating in the instruction and half of students from different grades of the curriculum.

The University Board also has two advisory committees, the General Curriculum Committee deals with the common problems and integrated courses of different curricula. The vice-rector acts as the chairman of this Committee. A separate Committee of Postgraduate and Continuing Education takes care of the development and practical implementation of scientific and professional training courses in health sciences. The General Curriculum Committee has members from all curricula and from the student union. The Committee of Postgraduate and Continuing Education acts as a liaison with the local societies of physicians, pharmacists and natural scientists as well as with free cultural activities. In addition to teachers and postgraduate students, this Committee co-opts outside members to discuss matters which concern them.

FIG. 2. ORGANIZATION OF THE UNIVERSITY OF KUOPIO


UNIVERSITY SENATE
General Curriculum Committee
UNIVERSITY BOARD
Committee of Postgraduate & Continuing Education
RECTOR
ADMINISTRATIVE OFFICE
Dept. of General Biology
Dept. of Theoretical Clinical Sciences
Dept. of Clinical Medicine
Dept. of Community Health
Dept. of Social Sciences (Nursing)
Dept. of Dentistry
Dept. of Mathematics Physics & Chemistry
Dept. of Pharmacy
Dept. of Environmental Hygiene
Curriculum Committee of Medicine
Curriculum Committee of Nursing
Curriculum Committee of Dentistry
Curriculum Committee of Physics
Curriculum Committee of Chemistry
Curriculum Committee of Pharmacy
Curriculum Committee of Environmental Hygiene

Admission of students

The first students were admitted to the University in the summer of 1972. There were 100 medical students, 15 medical physics students and 15 clinical chemistry students. The requirements for admission are usually a matriculation certificate after eight years of secondary school and high scores in the entrance examination. Scores in the entrance examination are considered to be twice as important as the scores granted on the basis of the matriculation examination. The entrance examination includes biology, physics, chemistry, psychology and social sciences. Compulsory subjects vary according to the curricula to be followed. Psychology and social sciences are commonly optional. In later admissions, mathematics has been regarded as a compulsory subject for students of medical physics.

The number of applicants has generally been three or four times the number of vacancies. An analysis of students admitted, according to their place of origin, has shown that about 70% of them come from the four eastern provinces.

The University also started to admit a special quota (15%) of students with a background in health care. These include nurses, health inspectors, physiotherapists, lower diploma students in pharmacy and dental therapists. They are selected on the basis of scores in the entrance examination.

In 1973, three additional courses were started: dentistry, pharmacy, and environmental hygiene. The admission requirements described above also apply to these subjects. The annual increase in student numbers has subsequently been between 200 and 220. The University has twice arranged a one-and-a-half year postgraduate course for nurses in health care administration and planning with a total student number of 37. In the academic year 1977–1978, the total number of students at the University for the first time exceeded 1000. In 1979 the first 24 students were admitted for a new academic curriculum of nursing.

University staff

The Planning Committee outlined the number and teaching duties of professors and other teaching personnel required to provide the necessary medical, physics and clinical chemistry instruction. Similar analyses have been carried out when new curricula have been planned by specially appointed task forces. Putting the plans into action has, however, depended on the annual governmental budgets which, in the past four years, have not met the expectations of the growing University. There were 160 permanent teaching staff in 1979 distributed among the existing five departments.

Because of the lack of permanent positions the University employs many specialists in different fields as part-time lecturers and instructors. Among these a core is formed of about 50 docents. Many clinical specialists actively participate in the supervision of practical hospital training.

PLANNING AND IMPLEMENTATION OF REFORMS IN EDUCATION

In Finland, a governmental committee was set up in 1969 to set out new guidelines for the development of medical training. This committee reported in 1971. The report introduced a model in which basic training is carried out in four-and-a-half years. It was followed by an obligatory specialization programme in general practice (primary care, community medicine) or in one of the clinical specialties. One of the major aims of this proposal was to shorten basic training and thus speed up the recruitment into health care.

The Planning and Preparatory Committees of Kuopio University as well as the first professors and teachers were well informed about recent innovations and the many controversies related to the training of medical students. In the preparation of different curricula for the University, these models were taken into consideration, but other factors had to be borne in mind in view of local conditions.

The curricula of the University have been developed on the basis of stated educational objectives. Some of these objectives are common to various curricula. The first task of the professors and teachers appointed in 1972 was to define the general objectives of the medical curriculum; these formed the basis of detailed planning and were published as a booklet. The planning and setting of educational objectives for new curricula were later carried out by the respective curriculum committees. The newest of these is the Curriculum Committee of Nursing which has the task of developing an academic training for nurses in health care planning and administration. The planning and implementation of a curriculum takes place according to the sequence shown in Fig. 3.

The following general principles were adopted in planning:

(*a*) Planning must be based on an analysis of tasks and responsibilities;

(*b*) The curriculum under development must be derived from stated educational objectives;

(*c*) Senior and junior teachers as well as students must be involved in planning;

(*d*) Plans must be subjected to internal and external criticism;

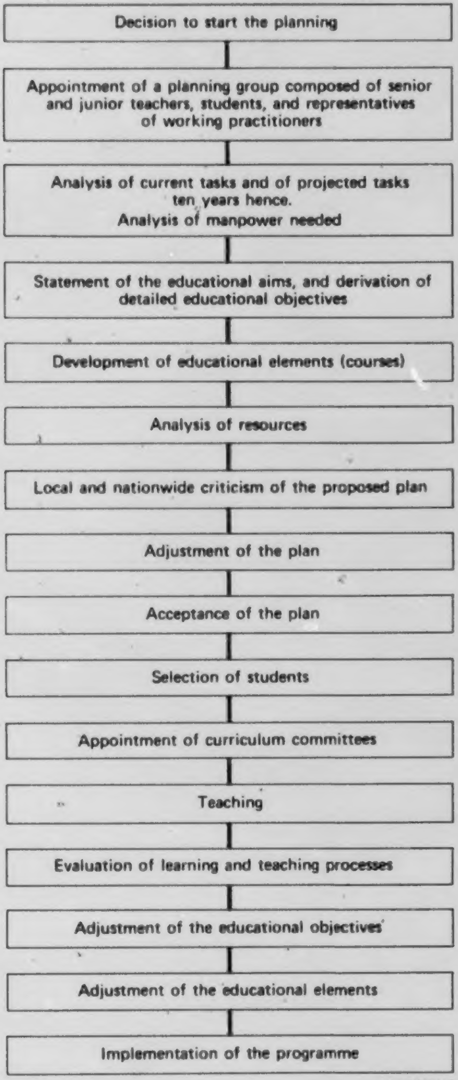
(*e*) Follow-up on the implementation of the plans must be arranged; and

(*f*) Planning must be a continuous process which utilizes feedback.

The curriculum committees continuously monitor the implementation of educational plans and the General Curriculum Committee acts as a coordinating mechanism. The various departments of the University teach according to the accepted plans.

Teaching proceeds in the form of courses on defined topics. Each course has a supervisor and, if the course is long or of broad scope, there are coordinators to help the supervisor. It is also possible to establish course committees for these larger courses. The annual University catalogue

FIG. 3. SEQUENCE OF STEPS IN THE DEVELOPMENT OF CURRICULA AT THE UNIVERSITY OF KUOPIO


Decision to start the planning
Appointment of a planning group composed of senior and junior teachers, students, and representatives of working practitioners
Analysis of current tasks and of projected tasks ten years hence. Analysis of manpower needed
Statement of the educational aims, and derivation of detailed educational objectives
Development of educational elements (courses)
Analysis of resources
Local and nationwide criticism of the proposed plan
Adjustment of the plan
Acceptance of the plan
Selection of students
Appointment of curriculum committees
Teaching
Evaluation of learning and teaching processes
Adjustment of the educational objectives
Adjustment of the educational elements
Implementation of the programme

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distributed to the students contains the following details of the courses:

Name of the course.
Supervisor.
General description of the course.
Educational objectives.
General topics of lectures and practical work.
Staff members participating in teaching.
Duration of the course in study weeks (each study week contains 20 hours of guided instruction).
Staff member responsible for organization.
Forms of evaluation.
Various forms of instruction in hours per student (lectures, seminars, demonstrations, laboratory and clinical practice, group work, etc.).
Textbooks and additional reading material.
Lecture hall, seminar room(s), laboratory required for the course.
Timing in the academic year and in the curriculum.

The revised programme for each academic year of the curriculum is dealt with each spring by the respective department boards and, finally, the University Board confirms the programme before the end of May for the next academic year. At the start of his or her studies, every student receives an hourly schedule for the whole academic year indicating the themes of lectures and practical work as well as the names of the lecturers.

When the University opened in 1972, the academic year was planned to start in August and to end in June. Thus, only one month of summer holidays was planned in addition to about one week free over Christmas and one over Easter. With such a time schedule, the medical curriculum was planned to take five years (previously between six and six-and-a-half years), the dental curriculum four and a half years (previously between five and five-and-a-half years) and the other curricula leading to a master's degree four years (previously five to six years). The first students graduating from the different curricula indeed completed their studies in the scheduled times. Since then, however, national statutes have defined the length of medical studies as six years and that of dental studies as five years. The curricula have therefore been revised and the summer holidays have been extended to two months.

Integration and coordination of studies

Since the curricula planned and developed for the University are all related to health sciences and have partially identical educational objectives, it was decided that all students should start with common courses. The first academic year was planned as a college year, identical for all students. When new curricula were added to the University, this practice could only partially be maintained. Currently, the basic common courses consist of chemistry, physics, cell biology, developmental biology, human biology (partially), pathophysiology, health care organization, basic ecology, basic pharmacology, toxicology, sociology, biostatistics etc.

The natural sciences form the common core of all curricula, and the aim is to give all students a comprehensive idea of the health care system in which they are going to participate after graduation. A further goal of the common courses is to eliminate barriers between clearly related branches of the health sciences and to promote team work both in health care and research. The method of teaching is topic teaching, which shortens and rationalizes the curricula. Furthermore, teachers can be used to teach in different curricula. In the more advanced stage of studies, the separation of curricula is more complete, but students can choose courses from other curricula for their programme as optional training.

Besides the horizontal integration of different subjects (anatomy, physiology, medical chemistry) in the topic teaching of a curriculum and the lateral integration between different curricula, the University of Kuopio has also tried to promote vertical integration in two ways. The classical way is to integrate preclinical and clinical subjects in topic teaching. This is accomplished both during the preclinical and clinical phases of the medical curriculum. In addition, topic-oriented panels and discussion forums are arranged during the clinical courses with participation from different clinical specialties and from the Department of Community Health.

Vertical integration between undergraduate and postgraduate studies has been accomplished on many occasions in connexion with the postgraduate scientific seminars which are optional for undergraduate students, and the professional specialist seminars in the University Central Hospital. The Committee of Postgraduate and Continuing Education is responsible for the organization and coordination of these seminars. A selection of these courses is described in the annual university catalogue which is distributed to the hospitals and health centres of the area.

Among the common courses, horizontal integration has been most thoroughly carried out in cell biology and human biology. Anatomists, biochemists, pathologists, physiologists, zoologists, etc. all participate in these courses. In clinical studies, internal medicine and surgery are closely integrated according to a modified organ system; in addition representatives from other clinical and laboratory specialties as well as teachers from the Department of Community Health participate in these courses. Details of the sequence of medical studies are shown in Fig. 4.

During clinical studies, the instruction consists of lectures, seminars and practical training. In practical studies, along with the examination of patients, the students work in the laboratories of clinical chemistry and physiology as well as in the X-ray department, maternity clinics, paediatric counselling stations and psychiatric outpatient clinics. In the evenings, the students take turns at being on duty in the outpatient clinics of the University Central Hospital. The main purpose of the experience is to allow the student to see the kinds of problems which have made the primary care physician send the patient to hospital for examination. This is also the place where the student learns to cope with emergency situations while on duty.

FIG. 4. SCHEME OF MEDICAL STUDIES AT THE UNIVERSITY OF KUOPIO

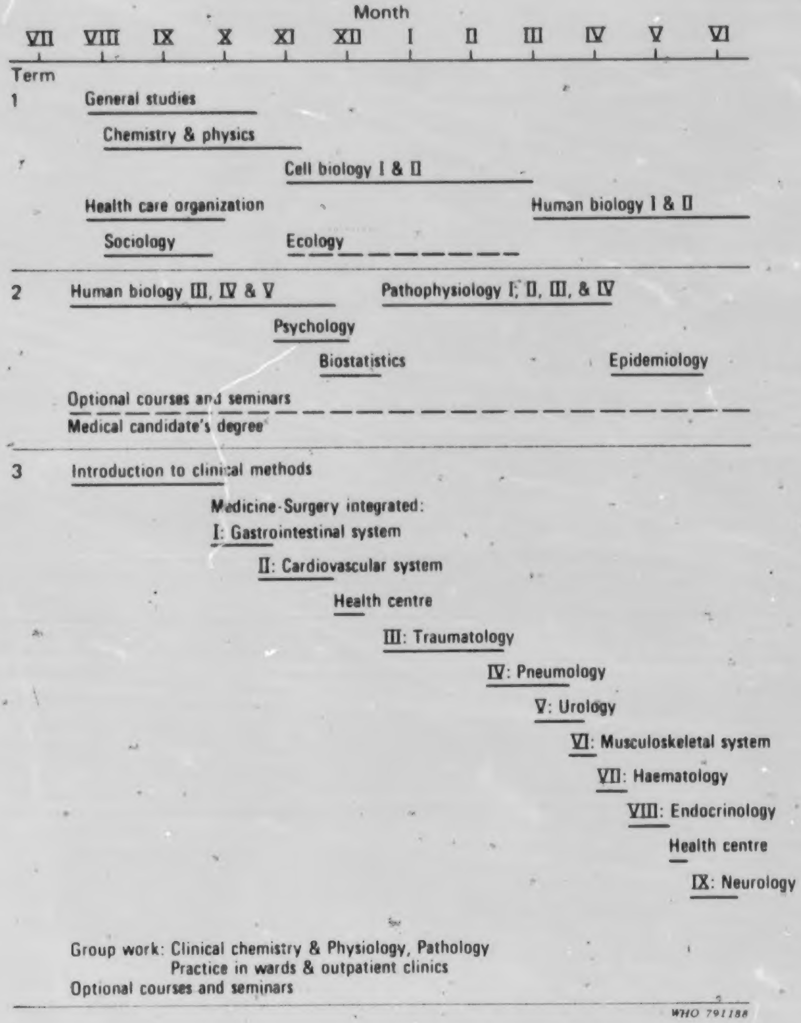

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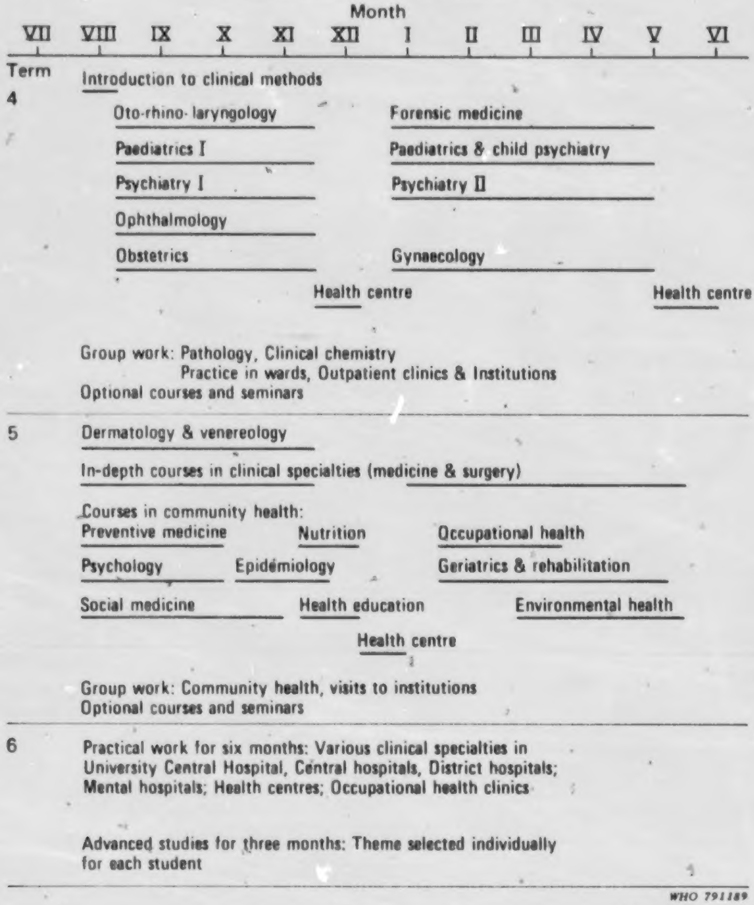
FIG 4. MEDICAL STUDIES (continued)


Month
VII
VIII
IX
X
XI
XII
I
II
III
IV
V
VI
Term
4
Introduction to clinical methods
Oto-rhino-laryngology
Forensic medicine
Paediatrics I
Paediatrics & child psychiatry
Psychiatry I
Psychiatry II
Ophthalmology
Obstetrics
Gynaecology
Health centre
Health centre
Group work: Pathology, Clinical chemistry
Practice in wards, Outpatient clinics & Institutions
Optional courses and seminars
5
Dermatology & venereology
In-depth courses in clinical specialties (medicine & surgery)
Courses in community health:
Preventive medicine
Nutrition
Occupational health
Psychology
Epidemiology
Geriatrics & rehabilitation
Social medicine
Health education
Environmental health
Health centre
Group work: Community health, visits to institutions
Optional courses and seminars
6
Practical work for six months: Various clinical specialties in University Central Hospital, Central hospitals, District hospitals; Mental hospitals; Health centres; Occupational health clinics
Advanced studies for three months: Theme selected individually for each student
WHO 791189

Health centre training

At the national level, a shift of emphasis in medical education from the hospital-based, specialty-oriented training to health centre-based, primary care-oriented training has been demanded. This has resulted in the appointment of a special task force with responsibility for laying down general principles for the use of local health centres in medical education. Independently, but in cooperation with the task force, the University of Kuopio has started developing its own approach to health centre training. This has been done in conjunction with the health centres concerned.

The development of the objectives of this training was preceded by and based on an analysis of present and future professional task profiles of a community physician and an analysis of the most prevalent health problems. The general objective of the training is thus to provide the future physician with the skills and knowledge he needs to work in primary care. An affective objective is to motivate the medical students to adopt primary care as their future career. The University has so far made contracts with 16 health centres in eastern Finland. Six of these are located in cities or towns and the rest in semi-industrialized or rural communities. The maximum number of students simultaneously working in a health centre is between six and eight. During the three clinical years, five two-week periods in health centres are arranged for each student. The aim is for students to visit different health centres to become familiar with differing socioeconomic and geographic conditions.

During the periods of health centre training, all teaching in the University Central Hospital is interrupted; teaching is then carried out by the personnel working in the health centres. Practical arrangements for transport, accommodation, individual work schedules, etc. are arranged by the teaching nurses of the Department of Community Health. The University pays for transport and the rent of temporary accommodation.

To supervise the work of the students, to guarantee the achievement of the established objectives and to provide the health centre personnel with continuing education, the University sends its senior teachers, at regular intervals, to the health centres. In the health centres they discuss the problems the students have encountered, give consultation aid to the staff and deliver lectures on topics agreed upon in advance with the staff.

The basic principle is that the collaborating local communities should not pay for medical education which is a national responsibility. Consequently, the University compensates the health centres for the loss of time occasioned by the teaching. Increased operational costs are also taken into account in assessing the amount of compensation.

The specific objectives of health centre training depend upon the phase the students have reached in the curricula. For example, during the first period the students have had very limited clinical experience but they have just taken the course in clinical chemistry. Consequently, they spend some of their time applying the skills and knowledge they have learned during this course. During subsequent periods, they gradually advance towards the adoption of the role of a primary care physician. Special attention is given to getting the students familiar with the tasks of all groups of health personnel so as to facilitate future team work. Considerable time is also devoted to learning the administrative and planning tasks that arise in the health centres. Detailed objectives have been established for each period and the daily schedules of the students have been designed to maximize the likelihood of achieving these objectives.

In order to improve effectiveness and to increase teaching abilities, the University has arranged special seminars for the physicians and head nurses of the cooperating health centres. During these seminars details of the next health centre training periods are discussed and new ideas debated. The seminars also include professional lectures and discussions on topics currently relevant to health care work.

Practical periods of training have also been arranged for the students in other curricula: dental students work for 10 weeks at the dental units of the different health centres, pharmacy students spend six months in drug dispensaries or pharmaceutical plants and environmental hygienists work in the supervision section of the community board of health, etc.

Guided practical training

Medical curricula in Finland have contained a six-to-ten-month period of internship in specialist-directed hospital wards. Special qualification training has taken place in the University Central Hospital.

In setting up the educational objectives for the medical curriculum, it was decided that the students should have an internship of six months before graduation. Two months of practice is required in internal medicine and two months in surgery. The remaining time can be served in the health centres or in other specialties. Owing to opposition from the League of Communities, practical training in health centres has not been possible in its original form, although, in general, local communities have been very cooperative.

Consequences of new legislation

A new statute concerning the degree of Licentiate in Medicine (graduate physician) was issued on 26 September 1975 and came into force in August 1977. This statute is based on the principles set out by the Cabinet of the Republic for the development of basic degrees in higher education. It is binding on all medical schools in Finland. The new degree programme is not markedly different from that developed for the University of Kuopio; in fact, many principles are identical with those adopted in the development of the new curricula in Kuopio.

The duration of the medical studies has now been set at six years and that of the dental studies as five years. The courses forming the curriculum will be divided into general studies, subject studies, advanced studies, internship and language studies. The statute includes general objectives for each category of studies. The major addition to the medical and dental curricula in Kuopio is the planning and execution of advanced studies. The statute states that in advanced studies, the student shall concentrate on one specific area of scientific importance that is essential to the duties of a physician (or dentist). This implies that the student should be given a theme related to health care or medical research on which he or she acquires a more profound knowledge than that gained during the regular courses. The student has the obligation to make some personal contribution in this field and prepare a written report on the topic. These studies should also include methodological subjects and participation in seminars.

The new statute also provides that, during the internship, the student shall become familiar with the practical functioning of health centres and with the duties of different health personnel groups as members of teams delivering health services. These have been among the priorities of the curricula developed at the University of Kuopio, and will now be applied in other medical schools in Finland.

EVALUATION OF PROGRAMMES AND PERFORMANCES

Built-in feedback system

An essential principle of curriculum planning at the University of Kuopio has been the continuous follow-up of the programmes and their submission for internal and external criticism. The curriculum committees form relevant forums for this continuous process. All parties concerned, teachers from different departments and students from different grades, can debate every aspect of the implementation of a programme. Each year, adjustments have been made in the composition of courses, in objectives, and in course requirements in educational content. Many changes have also taken place in the design and content of the health centre training.

The new regulations in the statutes on medical and dental degrees created a situation which required a re-evaluation of both curricula. Most of the work was carried out by the respective curriculum committees. Special task forces were required only to outline the principles for the advanced and language studies.

When the University of Kuopio started its activity in 1972, it soon became obvious that the benefits of the curricula innovations being developed should be realized and demonstrated in teaching and its results. In November 1972 the University Board appointed a task force to outline the principles to be followed in the evaluation of both teaching and learning. The task force recommended that the University should have a group or unit to coordinate the evaluation of teaching. It also developed a standardized questionnaire to be analysed by computer, for the evaluation of teaching.

This questionnaire has been used to evaluate different courses with respect to content, implementation, relevance, educational material, examinations and the abilities of the teachers. Results have been transmitted to the respective curriculum committees with appropriate suggestions for improvement. Due to the shortage of staff, the systematic evaluation of all curricula has not been possible. One important outcome of the teaching evaluations has been the production of new educational materials, more relevant to the curriculum than those commercially available. Also departments with an active evaluation group have close and confidential relations between teachers and students.

Assessment of learning

The adoption of integrated courses required common rules for teachers in evaluating the theoretical and practical achievements of the students. The task force mentioned above also provided these guidelines, which were presented to teachers in seminars.

The supervisors of the courses are responsible for arranging a summative evaluation of each course. This is composed of multiple-choice and essay tests of different taxonomic classes and levels. In many subjects practical examinations (slide tests in anatomy and pathology, patient examination and report in clinical specialties, etc.) are also required. The examinations are arranged soon after completion of the course. A certain time interval, however, is reserved for reading. The examinations can be repeated again about two weeks after the first attempt. Subsequent attempts can be made on general examination days which are arranged seven times a year. The selection of examinations it is possible to take on each day is, however, limited. Formative evaluation is used to assess portions of larger courses. In these cases, multiple-choice tests are usually employed. A computer programme has been developed to give rapid results and personal profiles for the students. After the examination, time is reserved to consider replies and discuss problems. Immediately after the examination, model replies are displayed on a bulletin board. Students also occasionally participate in the preparation of multiple-choice questions. Many departments have a large selection of these questions as well as essay tests to which model replies have been prepared. Nevertheless, new questions and tests are continually added to these collections and their validity is screened.

Before the student can embark on clinical studies in medicine or in dentistry he or she has to pass the examinations of the preclinical course. The present system of continuous assessment has ensured that there are very few drop-outs. In fact, examinations all at the same time no longer form the major obstacle to the graduation of a class.

Experiences and problems of new curricula

Although both the teachers and the students generally have a positive attitude to new developments in the curricula, some problems have been encountered. These result partially from the restricted resources available to the University during the critical period. Several problems remain unsolved, many of them will be familiar to other universities with similar objectives and set-ups. The following lessons have been learned from experience:

(*a*) Students should be allowed to participate both in the defining of objectives and in the planning of teaching.

(*b*) The objectives of health centre training should also be well defined. This presupposes a task analysis of the profession and a detailed analysis of the most prevalent health problems.

(*c*) The participation of the community in which the teaching experience will be implemented should be guaranteed. Both health professionals and laymen should be consulted and informed.

(*d*) Teaching should be carried out by local health personnel, because they best know the local problems and the ways of handling them. It is also possible to station university employees permanently in these centres but that is not economically feasible under local conditions with a wide distribution of centres.

(*e*) Teaching should support the health centres training and vice versa. Teaching activities in the health centres obviously lead to an improved quality of service which is supported by the consultations and continuing education provided by university specialists. Through these contacts, the cooperation between the hospital and the health centres should substantially improve.

(*f*) The teaching experience should be based on a team approach; the roles and functions of all categories of health care personnel should be taken into account. Students should learn to appreciate and trust the work of other groups of staff besides that of the physicians.

(*g*) Training should be based on the stage of education the students have reached so that the theoretical knowledge can be implemented in practice.

(*h*) Every opportunity to motivate the students to work in primary care, to maintain their interest in this work and to make them appreciate community medicine should be taken.

(*i*) The integration of subjects (disciplines) and curricula is time-consuming and requires additional personnel, resources and close cooperation. The serious shortage of new teaching staff has rendered the implementation of some new ideas difficult.

(*j*) Some health centre physicians have been sceptical about the entire approach; many of them feel inadequate as far as their teaching skills are concerned. Confidence has been created by seminars arranged for health centre personnel where difficulties have been detailed and analysed.

(*k*) As the teachers are specialists, they often experience difficulties in making their teaching relevant to curricula other than that of their own field.

(*l*) The "old-timers" have adopted the idea of precise educational objectives expressed in behavioural terms, whereas the "newcomers" from traditional universities find this approach strange to begin with.

(*m*) Most of the teachers feel strongly that this approach to educational planning and its implementation has been rational and meets contemporary requirements. The workload of some of the teachers has been, and will continue to be, enormous; elsewhere, there are many more teachers for the same workload.

(*n*) In the beginning, students were subjected to considerable pressures from students of other universities; they were told that the level of teaching in the new university was not adequate. The reason for these comments was that the curricula were derived from stated objectives and the courses carried new names and had different contents. Outside pressure has now diminished and the curricula of Kuopio have frequently been mentioned as commendable examples. A number of other universities have adopted some features of the University of Kuopio.

(*o*) The initially reserved and suspicious attitude of clinical specialists towards consultations in the health centres has in most cases entirely changed. Through these visits, they have been able to direct and organize the treatment, rehabilitation and prevention of diseases in their own specialties and to improve diagnostic practices in community medicine.

(*p*) The closer contact of the University with the health problems of the area has provoked and initiated many research projects. These include a comprehensive project on community-based prevention of cardiovascular diseases (North Carelia project), a computer-based ECG-analysis system with terminals in hospitals and health centres of the area (Data-ECG project), a computer-assisted data transfer between the hospitals and the health centres, e.g., in patient admission and laboratory data service (Open care project), and a data retrieval system for health centres (Watti project).

(*q*) The conflicting interests of the education of health personnel and the practice of health care have caused some difficulties which have retarded the possibilities of integrating these fields without undue bureaucratic measures.

(*r*) Representatives of other curricula (environmental hygiene, clinical chemistry, medical physics, pharmacy) have generally been positive in their cooperation with medicine and dentistry. They consider new research ventures more relevant when carried out in cooperation with experts of other health-related subjects.

(*s*) The continuous development of the health care system can be taken into consideration in the new type of curriculum. In fact, the close links between the University and the local health delivery service ensure that the area can be used for new developmental ventures.

CONCLUSIONS

New developments in health care should rapidly influence the academic training of personnel. Long traditions and rigid systems in conventional medical education have formed barriers to rapid improvements in this respect. The University of Kuopio has been designed to train personnel for the different functions of a modern health care system which is more and more diversified and requires intimate cooperation between different experts. This cooperation can start with basic curricula.

The comprehensive educational programme designed for the new University has been aimed at a continuous monitoring of current requirements. This presupposes stated educational objectives which, however, are subject to continuous adjustment and revision.

The achievements of the new programme at the University of Kuopio have only been possible because of the unprejudiced attitude of both teachers and students who have freely exchanged ideas and have not taken it for granted that any old "sacred" model was necessary for a successful curriculum.

CHAPTER 4

UNIVERSIDAD AUTONOMA METROPOLITANA, XOCHIMILCO, MEXICO:

AN INTERDISCIPLINARY INNOVATION IN MEDICAL EDUCATION

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EDITORIAL NOTE

The increasing demand for higher education in Mexico led to the founding of the Universidad Autónoma Metropolitana in Mexico City. The Xochimilco campus, opened in 1974, is one of the three constituent campuses, responsible for Health and Biological Sciences. The philosophy of the whole university seeks to promote interdisciplinary teaching. Emphasis is also given to the importance of learning by problem solving, and to the relevance of what is taught to the social conditions (structure and norms) of Mexico.

Interdisciplinary teaching is encouraged first by the aggregation of related disciplines into divisions, e.g. health and biological sciences, social sciences and humanities, etc. Within each division there is a core curriculum for all first-year students. After that, the different courses divide yet some interdisciplinary teaching continues.

Stress is laid on the required flexibility of the administrative structure. There is a series of curriculum committees to help the professional course coordinators. Some of these are permanent, others are created for specific teaching units, but in all of them, teachers from the different disciplines are represented.

The programme sets out to be community-oriented. This is facilitated by a formal agreement giving the University responsibility for the health care of about 2 million people in the southern part of Mexico City. The students become involved in practical community work from the beginning of the programme.

The curriculum has been designed to reflect the multicausality of health problems by combining the contributions of basic, clinical and social sciences around particular health problems.

The paper concludes with a very frank account of some of the main problems encountered.

Mexico City is the political, economic and educational centre of the Republic of Mexico and its metropolitan area has a population in excess of 12 million, almost one-sixth of the total population of the country. The rate of increase of the student population in higher education has been calculated as 2.6 times the city's rate of growth.

In 1973, the National Association of Universities and Institutes of Higher Education carried out a study on the demand for middle and higher education in Mexico. The study concluded that the metropolitan area of Mexico City deserved urgent attention and recommended that, along with the strengthening of the institutions of higher education throughout the country, a new university should be established in the metropolitan area. This new university was to have a flexible curriculum, capable of responding as required to the interests of the students and the needs of the country. The professional courses to be established would not, therefore, be rigidly structured but would be open to changes and transformations according to national requirements. The new university would also have a modern organizational system suited to an innovative educational programme.

UNIVERSIDAD AUTONOMA METROPOLITANA

In December 1973, the Mexican Congress created the Universidad Autónoma Metropolitana. The aim of the University is twofold: first, to offer education at undergraduate and graduate levels as well as courses for continuing education and specialization in the basic fields of human knowledge, including humanistic, technical and biological areas; and secondly, to create an awareness in the student of the environment in which he will develop professionally, either in the practice of his profession, in research or teaching. The University also endeavours to ensure that future graduates will be in close contact with the needs of the population, will acquire an insight into their role in society and, together with the academic staff, will participate in the promotion of national and universal culture, which are the integrating factors for a more equitable society. The University is mainly financed with funds provided by the Federal Government; tuition fees and other income represent less than 10% of its total budget.

Administrative organization

The University is composed of three campuses, located in different parts of the city, coordinated by a President's Office. This modular structure allows for the homogeneous development of different nuclei of students in various zones and, at the same time, provides the possibility of establishing other campuses in other parts of the metropolitan area when each of the existing campuses has reached its maximum population of 15 000 students. Each campus has its own rector and an administrative structure which is simple and flexible, thereby encouraging the most efficient use of the human and economic resources available to the University.

In its planning and development, the University encourages the search for appropriate solutions to the problems of the social and economic environment with which the institution interacts.

Academic organization

The University has an academic organization which possesses the flexibility necessary for the different degree courses offered. The academic structure seeks to foster inter-disciplinarity in all aspects of its programmes, institutionalizing, to better fulfil its function, a close connexion between the different branches of knowledge. For these reasons, the programmes offered by the Universidad Autónoma Metropolitana do not follow the traditional separation into schools or faculties but are grouped together in four divisions: basic sciences and engineering, health and biological sciences, social sciences and humanities, and design arts and sciences. Each division is composed of a number of academic departments. Flexibility is thus achieved for the integration, creation or change of the degree courses in order to meet the needs of the country more rapidly.

Study programmes

All the courses within one division begin with a common core programme. The common core was conceived not as the ill-fated general studies programme developed by some Latin American universities in the 1960s but as a mechanism which enables the student to handle correctly ideas, human relations and objects, and provides him with the necessary judgement to understand, not only his own profession, but also, with an interdisciplinary focus, the total environment in which it is exercised. The common core is designed to allow the student successfully to confront the multiplicity and growing complexity of the problems characterizing the area of his future activity.

Following the common core, specific subject areas are offered for each degree course and, finally, a set of optional subjects is offered from which the student may choose according to his own interests. The common core programme presents the student with several advantages. One is that he has three quarters in which to decide upon his vocation and to select the course best suited to him; another is that, at the end of the common core, he may change his area of study within a division without having to begin all over again.

Students are admitted to the University after they finish the upper cycle of secondary education. They must have an average of 7.0 or above (on a scale of 10) in their previous studies and they must pass an entrance examination. For courses in great demand, such as medicine, admission is restricted to 100 per class (in two registrations a year). Selection is made on the basis of entrance examination results.

Teaching systems

A quarter system (four eleven-week periods in the year) was established in order to make better use of teaching facilities, to achieve greater flexibility in the programming of the curriculum, and to allow a constant evaluation and greater motivation of the student. This system also provides better opportunities for the staff to carry out research. The most appropriate teaching system is used for each situation. Besides the traditional lecture method, the personalized system of instruction, audio-visual methods, workshop and group dynamics are employed.

In one of the campuses (Xochimilco), the entire teaching-learning process is conducted by means of an innovative educational programme characterized by teaching through problem solving, rather than teaching by subject matter. Mexico's development requires a contemporary approach to education. Thus, the degrees offered are a consequence of the present and future needs of the country. All courses have been planned for 12 quarters of full-time study, except medicine, which has a duration of 15 quarters. In some cases, students who must work besides studying are permitted to carry a lighter academic load and the duration of the courses is therefore longer.

UNDERLYING PHILOSOPHY OF XOCHIMILCO CAMPUS

In planning the Xochimilco Campus, much attention was given to the role of the University within the social structure of Mexican society. On the one hand, there is the demand by existing institutions for graduates to meet their manpower needs, on the other hand there is a demand for higher education by individuals wishing to become active agents in transforming Mexican society. Furthermore, in view of the changes that are taking place, there is the need to prepare people to adjust to the different situations and expectations of society.

Historically, a separation had developed between scientific research, the teaching of science and its application. Research institutes performed research, the universities did the teaching, and a variety of organizations were responsible for different aspects of application. For a new university to be relevant to the needs of a changing society, these separations had to be reversed.

Multidisciplinary research, integrated teaching, the formation of multiprofessional teams and the integration of teaching staff are all examples of attempts to establish effective relationships between the elements mentioned. Further to this, however, there is still the need to overcome the tendency of science to become removed from the needs of society. It would be necessary, therefore, to have the university involved in real life situations in Mexico so as to promote relevant research and encourage innovative action.

Essential to this concept of a critical and active university is the idea of the student who guides his own learning and development by being himself involved in the process of the transformation of society. Students must be provided with objectives or problems which they must then approach with various sciences and techniques in order to obtain scientific answers. These answers constitute the student's knowledge, not just the result of rote-learning but the result of an active process of discovering the structure and significance of that knowledge and its relationship to other knowledge.

Organic structure

Following the general principle of the Xochimilco Campus of the University that programmes should constantly and permanently adapt to the changes in society, a flexible structure was developed. This was, basically, an articulation of an organic and a functional structure, the former being defined by the technical and scientific characteristics of the various departments and the latter in terms of the teaching programmes.

This device allows the greatest flexibility in the programming of teaching and, at the same time, establishes a permanent departmental structure with greater emphasis on research and service activities.

The scheme is based on the premise that teaching programmes are not necessarily of a permanent character and that study specialties (professional courses) may be established or eliminated according to the needs of the country, the demand and interest of students, and existing occupational opportunities.

For each professional course there is a course coordinator, designated by the director of the division concerned. He is responsible for organizing curriculum committees, with the staff of the various departments, for the design of the course syllabus and for the organization, implementation and evaluation of the various units that constitute the course. The term of each committee is variable; a few are permanent, others exist only for the duration of a teaching-learning unit. The committee members maintain their relationships with the departments to which they are formally assigned and return to them on completion of the committee duties.

FUNCTIONING OF XOCHIMILCO CAMPUS

The academic programme of Xochimilco Campus began in November 1974 with 750 students enrolled in 12 different courses in two divisions: the Division of Biological and Health Sciences, and the Division of Social Sciences and Humanities. In 1975, a third division was established, the Division of Design Arts and Sciences, which offered four different courses. The total student population in May 1978 was about 6000, enrolled in 17 different professional courses at the undergraduate level and three postgraduate courses at the Master of Science level. There are about 350 full-time staff.

Buildings for administrative and academic activities have been constructed, occupying an area of about 50 000 square metres. Four dental clinics have been built on the outskirts of the city and equipped for student work. A farm of about 90 hectares has been procured for teaching and research in agriculture and animal husbandry.

Training of health personnel

The training of health personnel at the Universidad Autónoma Metropolitana is, at present, the responsibility of the Xochimilco Campus, and in particular that of the Division of Biological and Health Sciences with the collaboration of the other two divisions of this Campus: the Division of Social Sciences and Humanities and the Division of Design Arts and Sciences.

The Division of Biological and Health Sciences has four departments organized not on the basis of disciplines or professions but with a high degree of multidisciplinarity. The four departments and their personnel are as follows:

Department of Man and his Environment: biologists, ecologists, geneticists, statisticians, biochemists, and demographers.

Department of Agriculture and Animal Production: veterinarians, agronomists, rural economists, zoologists, nutritionists, and virologists.

Department of Health Care: physicians, nurses, dentists, health administrators, epidemiologists, and statisticians.

Department of Biological Systems: biochemists, physiologists, parasitologists, microbiologists, morphologists, and immunologists.

The departments are not organized in terms of offering specific courses but each has the responsibility for the necessary cooperation in the development of the various courses. The courses are not static units for an indefinite period but, through a continuous process of revision, are subject to changes, adaptations and reforms, according to the demand for human resources and their own intrinsic development.

The training of health care personnel is one of the areas of great interest to the University. It is an integral programme which includes the training of nurses, dentists, physicians and other health personnel.

The health care personnel programme at the Xochimilco Campus aims to train staff for an integral approach to health care, not only in the curative aspects but also in the prevention of disease, the promotion of health, and rehabilitation. From the beginning, the programme is community-oriented rather than classroom- and hospital-based. One of its primary aims is to establish links between the educational process and the health care delivery system of the country.

Coordination through formal agreements has been established with the Ministry of Health and other agencies concerned with the delivery of health care. The area used by the programme in the southern part of Mexico City covers a population of about two million and is part of a regionalized health care programme for the metropolitan area. Students from other health fields such as nursing and dentistry, and from related areas such as social sciences, architecture, design and communication sciences, also work in the same geographical areas. This population has urban, periurban as well as rural characteristics.

Curriculum design

In the traditional planning of medical school curricula, all the disciplines considered to be necessary components of the professional cycle of knowledge were included, and certain amounts of time allocated to each. The educational objective of the teachers of these disciplines frequently seems to have been that of exhausting the relevant subject matter, and only rarely was there any concern about what might be considered applicable or relevant to the professional activity for which the student was supposedly being trained.

The organization of the syllabus first for the basic sciences and then for their clinical application reflects an essentially "theoretical deductive" approach, i.e., theory first, then application. However, if the full intellectual potential of the student is to be used and developed, the process of learning should also include the "empirical-inductive" approach. In this *approach, the student is presented with real-life situations or problems and* then helped to discover the information required to solve them.

The curriculum of the medical course reflects the need to establish an educational structure more relevant to the process of social transformation in Mexico and the consequent changes in the delivery of health care.

The curriculum is based on three elements: multicausality of health problems (causal ecology), i.e., taking as a starting-point the social factors and the epidemiological situation; the blending of theory and practice; and the practical combination of basic, clinical and social sciences in solving health problems.

The curriculum is organized in four major phases after the common core period described above.

Phase I. Interaction of the various factors influencing the process of health and disease.
- Man and his environment
- Man and his internal milieu

Phase II. Growth and development.
- Reproduction
- Growth and development of infants and preschool children
- Growth and development of schoolchildren and adolescents

Phase III. Health and disease and man's economic activity.
- Health and primary economic activity
- Health and secondary economic activity
- Health and tertiary economic activity

Phase IV. Planning and administration of basic primary health care programmes.
- Maternal and child health programmes
- Comprehensive health care of the adult
- School hygiene
- Health education

The students' work is at the University Campus laboratories, small general hospitals, health centres, rural clinics, schools, day nurseries, factories and in the community in general. From the first stages of the course, students are involved in practical community work, performing simple tasks in households or primary health care units. They work under close supervision by the permanent staff of the University and the staff of the health unit concerned; the latter have temporary contracts with the University and receive an additional stipend for the duration of their academic functions. These arrangements form part of the agreements that the University has with the health service agencies, as well as with the University Staff Union.

The evaluation of student performance is a continuous process during the academic period (one quarter). It is basically a formative evaluation oriented to the early detection and correction of any problems that the student may be facing. Evaluation is based on achievement of objectives, student performance and attitudes in relation to activities and tasks.

Various evaluation methods are used: assessment of reports, group participation, a few written tests, group evaluation, and self-evaluation. Preliminary data seem to indicate that failure and drop-out rates are less than in the traditional system.

Example of teaching-learning unit

A brief consideration of one of the teaching-learning units (modules) may help to clarify some of the underlying concepts. The following is a description of the module "Reproduction", which is taken by medical students in their sixth quarter (second year) and occupies 58 working days.

The module "Reproduction" follows the module "Man and his internal environment", which deals with problems of homeostasis as they relate to the processes of health and disease of the individual and of society. It precedes the module "Growth and development of infants and preschool children".

The objective of this module is that the student should understand the multifactorial problem of human reproduction by analysing maternal and child morbidity and mortality problems in a specific geographical area. The module is divided into five units:

Unit I. Population reproduction in general. Demographic considerations, both worldwide and specific to Mexico. Analysis and review of vital statistics. The students analyse data collected by themselves in a community.

Unit II. Reproduction of the human couple. This unit is oriented to understand the anatomical, physiological, neuroendocrine and psychological basis of sexual life and reproduction of the Mexican couple. The students make surveys in the community, work with anatomical models and autopsy material. Along with the instructors, students provide counselling on family planning.

Unit III. Prenatal growth and development. The students analyse the biological aspects of normal pregnancy, the importance of prenatal care of pregnant women; early diagnosis of pregnancy. Relation of maternal and child morbidity and mortality to biological, socioeconomic and cultural factors and health services delivery. The work is mainly in primary obstetric care units as well as in specialized perinatology hospitals.

Unit IV. Delivery and postpartum. The student obtains knowledge and abilities to take care of a normal delivery and postpartum; early recognition of an abnormal delivery and postpartum complications. Through his work, the student should be able to relate this to the sociomedical conditions of the community where he is working.

Unit V. Drawing up a plan for comprehensive care of women at the reproductive age in the community where the students are working.

During this module the students carry out community domiciliary work at health centres and preliminary maternity care units in the area; clinical laboratory work, statistical analysis of data, attendance at lectures and group discussions, work on audiovisual aids, library work and consultation with instructors and faculty are all done at the campus; while anatomy, histopathology and autopsy work are at the pathology services of a large general hospital.

Problems in the implementation of the programme

The main problems encountered in the implementation of the programme at Xochimilco Campus are outlined below.

There is a lack of staff sufficiently motivated and trained to participate adequately in the programme. The staff feel insecure in a new educational scheme that demands a greater individual and team work effort than does the traditional system, and frequently transmit their anxiety to the students. A continuous faculty training programme has been established to overcome this difficulty, but will have to be strengthened.

The Xochimilco innovation developed very quickly, perhaps too quickly. The first students arrived only a few months after the completion of the planning document. Staff had to be recruited in haste, and perhaps in some cases do not have all the desired qualifications. Staff recruitment policies have been reviewed and stiffened.

The organization of vertical interdisciplinary departments as administrative units, and horizontal course committees as interdisciplinary and interdivisional teaching units sometimes leads to problems of jurisdiction. One of the main tasks of the chief administrator is to keep an adequate balance between these two groups.

The implementation of the Xochimilco system of modular teaching is very labour-intensive. Modules have been expensive in terms of man-hours to write and to operate; this has had adverse effects on research. Xochimilco, because of its historical development, had to concentrate in its early years on teaching. The time has now come to put more emphasis on research. It has been decided that there should be a moratorium on changes in teaching and programme design. Xochimilco will stand or fall on the quality of its graduates and the quality of its research. The decision has been taken to allow some well-tried modules to stand for two or three years without significant modification. Staff are being encouraged to teach the same modules for the same duration, thus reducing the amount of time that has to be spent in preparation.

CHAPTER 5

TRIBHUVAN UNIVERSITY INSTITUTE OF MEDICINE, NEPAL

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EDITORIAL NOTE

At its foundation in 1972 the Institute of Medicine was made responsible for the development of training programmes to meet the health manpower needs of Nepal.

The author, then Dean of the Institute, describes the administrative structure of the Institute and the ways in which this had to be modified in order to manage and develop several different training programmes on 12 campuses.

The need for health manpower meant first of all training large numbers of technical or auxiliary health workers. It also required that the physicians to be trained would be appropriate to the needs of the health services of Nepal, in contrast to the existing doctors who had been trained abroad. Hence, a new medical curriculum had to be developed to train community physicians. This curriculum and its objectives are outlined.

A description is given of the way in which the middle-level certificate courses are designed not only to train health workers for the needs of the health services but also to provide the basic entry requirements for the medical degree programme being developed for Nepal and for the medical schools in India that would continue to be used in the meantime. This meets the need for educational and career ladders while, at the same time, maintaining equivalence with other civil service grades.

Cooperation between the Ministry of Health and the Institute, while essential, has not always been easy to develop. Yet it was only through that cooperation that health services and manpower development could be planned and coordinated to meet the health needs most appropriately.

According to the 1971 census, the population of Nepal is around 11.5 million. The crude birth rate is estimated to be 43 per 1000 population, the crude death rate 23 per 1000 population, and the infant mortality rate 172 per 1000 live births. Population growth per annum is about 2%.

The main causes of morbidity in Nepal are gastroenteritis, parasitic diseases, respiratory conditions, tuberculosis, leprosy and goitre. Malaria, although reduced, has not been eradicated and there has been a resurgence of this disease in recent years. Maternal mortality and morbidity are high.

The provision of preventive health service and medical care in Nepal presents a great challenge. The terrain is difficult, with no road access to many areas, resulting in an insufficient supply of food grains and other commodities and poor delivery of health services. Most of the population (96%) live in rural areas where health and hygiene have received little attention. The gross national product is low at only US $80 per capita per annum. The literacy rate of the population is also low, adult literacy being less than 14%. In general there is lack of health and hygiene consciousness.

There is a maldistribution of the available health personnel due to reluctance to serve in difficult or remote areas. Although government policy is to locate at least one rural health post in each of the nine subdistricts into which each of the 75 districts of Nepal is divided, this has not yet been achieved.

THE SITUATION BEFORE JULY 1972

The history of institutionalized training for health services began in Nepal in 1929 with the establishment of an Ayurvedic School at Naradevi, Kathmandu, by the Education Department of the Government. The Civil

Medical School for compounders and dressers, established in 1931, and the Health Assistant School, started in 1956, were both discontinued in 1962 and the Auxiliary Health Worker School was started at Majarajgunj, Kathmandu. A nurses' training school was started in 1956 in the Kathmandu Valley, and a separate Mission Nursing School at Shanta Bhavan was recognized by the Government in 1964. An auxiliary nurse midwife school was started at Bharatpur in 1961. This was the first educational institution for health care outside the Kathmandu Valley. Two more auxiliary nurse midwife schools outside Kathmandu followed, one at Biratnagar (1967) and the other at Nepalgunj (1968). A laboratory assistant school was started in 1970.

Up to July 1972, the following personnel for health care had been trained in Nepal:

Ayurved practitioners	222
Compounders and dressers	451
Health assistants	108
Auxiliary health workers	341
Compounders, dressers, and malaria workers upgraded to auxiliary health workers	152
Auxiliary nurse midwives	241
Nurses	190
Laboratory assistants	11

Physicians (both generalists and postgraduate specialists), health educators, sanitarians and medical laboratory technologists were all trained abroad. It is estimated that more than half of the students officially sent abroad, mostly to India, for training as physicians did not return on completion of their studies. Almost 50 sanitarians were trained in India and overseas on United States Agency for International Development (USAID), WHO and other fellowships but only three were ultimately working as sanitarians in Nepal.

In Ayurved, Ayurved Madhyama, Ayurved Shastri and Ayurved Acharya were the three categories of certificates given by the Naradevi School up to 1972. It is noteworthy that while a few "modern" Ayurved physicians did not want the study of Sanskrit to be part of the Ayurved courses, others treated Ayurved more as a study of the Sanskrit language than as a study of patients. Clinical care was particularly lacking in the teaching of Kaumarbhrit (paediatrics) and Prasutitantra (midwifery). Empirical knowledge and scientific enquiry, which had made Ayurved the most advanced of ancient medical systems, were disowned by Ayurved's later practitioners. This deficiency was even more evident in Ayurved education. Because of a lack of knowledge of modern botany, the study of medical plants could not progress; many plants described in the old *Nighantus* (formularies) could not be recognized. Modern public health was not taught. Not surprisingly, many Ayurved physicians found the temptation to use covertly the drugs of modern medicine irresistible. A choice was offered of Ayurved services as against other government health services instead of the two supplementing each other to provide coverage for the entire country. There was therefore the danger of Ayurved stagnating or even vanishing into oblivion under the pressure of modern medicine.

Initially, the admission requirement for the auxiliary health worker programme was eight to nine years of schooling but this was soon raised to the tenth grade. Having taken an end-of-school test, the candidate was required to have been chosen to sit, but not to have passed, the School Leaving Certificate examination. The theory was that someone who had passed the School Leaving Certificate examination and done two years of training would expect a non-gazetted Class I appointment whereas the position of auxiliary health worker was a non-gazetted Class II. This administrative nicety was naïvely expected to get round the problem of future promotion.

The training of auxiliary nurse midwives was started in order to train personnel for the health posts but, because of the shortage of nurses, all the trainees were posted to hospitals. This continued until 1972 when the first auxiliary nurse midwife was stationed at a health post. Over the years, trainers had become resigned to the fact that the training was actually meant for hospital work. Therefore, each year comparatively less emphasis was paid to community training. Eventually, community nursing practice came to mean some brief experience in a hospital or a health post clinic.

The training of nurses was a three-and-a-half-year staff nurse course, including nine months of midwifery. The School Leaving Certificate, obtainable after 10 years of school, was not required for admission to this course until some time later. Then, instead of the Certificate being issued by the Department of Health Services, it was issued by the Nepal Nursing Council.

THE ORGANIZATION OF TRIBHUVAN UNIVERSITY

The first five-year plan (later shortened to four years) of the National Education System was adopted in 1971. The objectives of education as laid down under the National Education System were, briefly, as follows:–

(*a*) to produce citizens who, with full faith in the country and the Crown, will conduct themselves in accordance with the *Panchayat* System; and

(*b*) to meet the manpower requirements of development through the spread of scientific and technical education.

The National Education System plan completely transformed the educational system of the country, even though it provided only guiding principles for higher education. The responsibility for school education was given entirely to the Ministry of Education. All types of higher education in Nepal were to be part of the functions of the institutes which were to be set up, under Tribhuvan University, to provide instruction, set examinations, and carry out research in their various subject areas while separate research centres were established for applied science and technology, economic development administration, educational innovation and development, and Nepalese and Asian studies.

The Act which had established Tribhuvan University in 1958 was replaced by a new Act of Nepal's Parliament in 1972 which defined Tribhuvan University as the totality of the ten institutes, the four research centres and the Central Office. The Central Office consists of the Vice-Chancellor and, under him, the Service Commission, the Rector who coordinates academic affairs, admissions, student affairs and research, and the Registrar who coordinates fiscal matters, examinations, the work of the Service Commission, the appointment of personnel and general administration. The Vice-Chancellor, Rector, Registrar and deans are appointed by the Chancellor of Tribhuvan University.

The institutes

Each institute is headed by a dean, who has academic as well as other duties. Each campus is, academically, a branch of an institute and, administratively, a branch of the Central Office. Within each institute, the campus in which the dean's office is located is called the central campus. Campuses are spread throughout the country and the central campuses are not necessarily in Kathmandu. Actually only three institutes (law, science and medicine) are in the Kathmandu district. Each institute has a faculty board which recommends new educational programmes, approves new curricula, lays down the minimum requirements for admission into programmes, the type of entrance tests to be carried out and the form of the comprehensive, or final, examinations. The faculty board decides on the educational materials, the facilities and teachers required for educational programmes; it also evaluates the educational programmes of its institute. It arranges for extension (secondary school or non-formal) programmes to be conducted by the institute and approves curricula. Each faculty board is chaired by a dean and has as members campus chiefs, the chairmen of subject committees, subject experts, and three official nominees of the relevant governmental Ministry.

Each faculty board has a standing committee which, besides providing additional coordination between the institute and employers, considers the needs of the institute in relation to the numbers and quality of manpower required as well as to the admission target and the institute's educational programmes. The standing committee also acts as the executive body of the faculty board. It is chaired by the dean and has one member from each group in the faculty board.

Each campus also has instruction committees, the number of which depends upon the number of students and teachers in the various disciplines. An instruction committee may be unidisciplinary or multidisciplinary. All the teachers on the campus who teach a particular subject belong to the corresponding instruction committee. The instruction committee is responsible for instruction and research in the subject or subjects with which it deals, assigns duties to teachers, coordinates class routines, evaluates the courses, and provides feedback directly to the faculty board.

While the faculty board and instruction committees are constituted under the University Laws passed by the University Council, subject matter committees are constituted by the Central Office of Tribhuvan University for each subject or group of subjects within the particular institute's area. Each committee consists of subject teachers, persons outside the University who work in the same field, and teachers of the same subject in other institutes. This composition is difficult to achieve in professional or technical institutes because their principal subjects are not taught in other institutes. Another problem with subject committees is that they are appropriate when the curriculum is planned, by discipline; but less so for courses in which disciplines are integrated. The subject committee is expected to prepare draft courses in its particular subject; recommend instructional and evaluation methods, text books, course materials and aids; recommend ways to improve the quality of instruction in the subject after evaluation of the instruction, the examinations and other academic activities in relation to the course; and recommend ways to improve study and research in the subject.

Although Tribhuvan University is an autonomous body it has to assume responsibility, on behalf of the Government, for meeting manpower requirements. Indeed, higher education as a whole is organized to meet the manpower requirements of the country, based on nationwide estimates. On the one hand, an increasing number of those who complete school education are to be encouraged to enter the technical or professional institutes; on the other hand, the aim of higher education is to maintain a high standard of teaching and study. Eligibility for higher education is based equally on a separate admissions test organized by each institute, and on the School Leaving Certificate. The first level of undergraduate education is for the University certificate of the particular institute. All institutes then demand one year of field work, in addition to a test, before the student is allowed to continue to the next level of studies. (This has been the practice of the Institute of Medicine only.) There is also a provision for each student to undertake national development service for one year, during which he or she serves in the villages in educational, health, agricultural or construction work. For the Arts, Commerce, Science and Education Master Degree courses, this service starts after the first semester.

While instruction is decentralized, the fiscal and routine general administrative responsibilities of campuses are centralized in the Central Office. The appointment of all personnel (administrative, teaching and research), is also carried out by the Central Office, on the recommendation of subject experts. The deans have little role in the selection of the teachers and research workers and no role in the selection of the administrative personnel employed in their institutes. They have, however, the authority to transfer teachers and administrative personnel between the campuses of their institutes.

THE INSTITUTE OF MEDICINE

The Institute of Medicine was established on 16 July 1972 as a certificate-level institute under the first National Education System plan (1971–1975) for education and research in medicine and public health. Provisions were made in the second National Education System plan (July 1975–July 1980) for upgrading the Institute. Before the restructuring of medical education, students who had passed the School Leaving Certificate examination of the Ministry of Education and wished to carry out higher studies in medicine and public health had first to sit the entrace test of the Institute of Medicine for the certificate-level course. After completion of the certificate-level course, students were required to serve a minimum period of one year in field work and were only then eligible to take the entrance test of the next level of studies. This meant that only those students who had completed the certificate course at the Institute of Medicine were eligible for higher studies in medicine and public health in Nepal. On 16 July 1972, the Ayurved School at Naradevi Kathmandu, the auxiliary health worker school at Maharajgunj, the government school of nursing at Bir Hospital, the mission school of nursing at Shanta Bhawan Hospital, and the three auxiliary nurse midwife schools were transferred to the Institute of Medicine; the Institute thus became a unique multi-profession educational health complex.

An enormous advantage in the present organization of the educational system is that each institute is free to decide on the curriculum, the entry requirements, and the type of entrance test and final examination in its subject area; each institute thus sets its own standards.

The Institute of Medicine requires a complex administrative system. The Dean is responsible for all the twelve campuses except in matters of finance and routine administration; his office is in the central campus of which he is the campus chief. The Institute of Medicine has three assistant deans. It is not possible to assign them to the separate tasks of dealing with examinations, curriculum and instruction, and all other administrative matters because this would conflict with certain of the present rules of the University. Unless one assistant dean can be specially delegated to look after the central campus, the three assistant deans will have to share this task. The Dean himself will also have to carry out certain of the functions of the campus chief, e.g. dealing with student affairs.

Actually, there is one assistant dean at the central campus with the authority to carry out the functions of a campus chief. This post is usually filled by a medical doctor. One assistant dean is responsible for all nursing and auxiliary nurse midwife programmes. It is hoped that this will meet the perennial complaint that the health services are totally doctor-dominated. The third assistant dean has general responsibility for all other programmes run in the campuses. These programmes include the Ayurved, community medicine auxiliary, senior auxiliary health worker, and certificate in general medicine (for health assistants) programmes run in other development regions. Many of the campuses have scientists, health educators or other professionals as campus chiefs. The third assistant dean could therefore be an Ayurved physician or a health educator, a sanitarian, a basic science teacher or even a medical doctor. This administrative ladder means that the Dean's post need not necessarily be filled by a medical doctor.

Within the central campus, the main problem is that although teachers receive copies of a memorandum on organizational structure, rules about instruction committees, and tasks to be carried out, many do not read them and often complain in workshops about the lack of communication and not knowing what they are supposed to do. The committees cannot be effective unless they discuss and carry out their various functions, as described in the rules. Planning is meant to be initiated by discussions in these campus committees. Each campus sends its plan to the Dean who integrates the various campus plans into an Institute plan which he then recommends to the Vice-Chancellor. This plan then goes to the National Planning Commission through the National Education Committee. This method of planning from the bottom requires having to coax the campuses to discuss their requirements thoroughly at all levels. Over the last six years intracampus discussion has improved but more remains to be done.

PERSONNEL FOR HEALTH CARE

The first tasks of the Institute were to meet the immediate shortage of manpower and to institute a forward-looking and rational plan for the training of health manpower of various categories in the middle and higher levels to meet the future needs of the country.

In order to plan for appropriate manpower to meet the future needs of the country, information was required on the health status of the community, the likely direction of thinking at the Ministry of Health, and future trends in overall development planning.

Pilot projects

There was a lack of data on the health needs of the country, and planning therefore had to depend upon personal impressions and intuition. A survey carried out in 1966 in many parts of the country using a very small sample confirmed the high incidence of certain conditions such as intestinal parasites and goitre but found little undernutrition or malnutrition. In 1971, pilot projects were started in two districts by the Ministry of Health to find out how the vertical programmes of family planning, maternal and child health, tuberculosis control, leprosy control, smallpox eradication, and malaria eradication could be effectively merged with the basic health services at health post level.

The Institute of Medicine started similar research projects to study the needs of the community as perceived by the community and how these were being met within the community. These early studies raised awareness of the need for such studies besides providing information of direct use in service and curriculum planning and in training teachers in the research methodology needed for the studies. The studies were later taken up by the Ministry of Health in the form of the nutrition survey and fertility survey. As part of the curriculum development process, an inventory of manpower was developed, an opinion survey was carried out, causes of attrition and dissatisfaction were analysed, follow-up visits to health posts were carried out by teachers, and verification studies of the tasks performed by staff of hospital and health posts were carried out. Every opportunity was taken to review the job descriptions prepared by the Ministry of Health, in the presence of officials from that Ministry, and to put forward suggestions to improve them.

Manpower needs

Between July 1972 and January 1973, time was spent considering the various possible solutions to the manpower development problem, how to rationalize the manpower categories yet continuously meet the manpower demand without any initial gap in supply; how to develop an educational ladder for all the manpower produced and how to introduce a curriculum rapidly and continue to improve it as the experience of teachers grew.

The greatest need of the country is for village-based aides, village health workers and village midwives, the middle-level workers (paraprofessionals and auxiliary) occupy the second position, members of the professional group are required in smaller numbers and, finally, there is a need for a few specialists and research workers.

CURRICULA

Between February and June 1973, time was spent in developing some of the curricula. Although the certificate courses at all other institutes were of two years' duration, it was proposed that the course at the Institute of Medicine should be a minimum of two and a half years' duration. This course would include the general medicine course to prepare health assistants, as well as the health laboratory, pharmacy and radiography courses. The course in general medicine was to include the premedical basic science content plus the medical content of the old health assistant course.

The task was to condense the two-year premedical basic science courses as well as the two-year health assistant courses into a two-and-a-half-year course, so that:

(*a*) the course would produce middle-level paraprofessional health workers ready to take charge of a health post;

(*b*) the course would include all the relevant basic science (botany, zoology, chemistry, physics and mathematics) of the former course, without all irrelevant aspects, the idea being that after one year of experience in the field the paraprofessional would not have to study these basic sciences again in order to be admitted to the medical education programme;

(*c*) The Medical Science Certificate would replace both the Intermediate Arts and Certificate in Science two-year courses as the regular stream for all those in Nepal wishing to study medicine or nursing. The same qualifications were obtained by health post paraprofessionals.

These changes were difficult to implement. First, neighbouring countries were retaining the old two-year premedical science course and, secondly, an innovative medical education programme, planned to start in 1978 would need credibility. If one year of service experience were to be compulsory for admission into higher education in medicine in Nepal and if the first batch of Medical Science Certificate holders were to come out in February 1976, would these early students have any chance of being accepted for admission into medical schools in India, for example?

Following a suggestion by the author, a course for the auxiliary health worker (later called community medicine auxiliary) and an auxiliary nurse midwife course were retained but the curricula of these two courses were restructured to be completed in one year, following the school leaving certificate. Training arrangements were to be made to provide opportunities for graduates of these courses to move up to the educational ladder.

The new community medicine auxiliary course was designed for those who wanted to become health workers but were not selected for the Medical Science Certificate general medicine course. Certain places were to be reserved in the general medicine course, on a competitive basis, for community medicine auxiliaries with a minimum experience of one year. The community medicine auxiliary course was to provide an opportunity for others to prove their worth.

To meet the urgent needs of the health posts, all auxiliary health workers with ten years of schooling (but not necessarily the school leaving certificate) who had completed the two-year auxiliary health worker course and had spent five years in service were given a three-month course to qualify as senior auxiliary health workers. These senior auxiliary health workers would take charge of the health posts for a few years until there were enough health assistants to assume command. The senior auxiliary health workers could then return to their original jobs or continue with further study at Tribhuvan University to gain the Medical Science Certificate.

COMMUNITY PHYSICIANS

In a developing country such as Nepal, the basic role of the community physician in the district health services is to render secondary care in the district hospital, organize preventive health service through the district health office, supervise the work in the health posts, and educate and train the paraprofessionals and auxiliaries attached to the health teams within the district.

Classes for an innovative and need-based programme of training of community physicians started on 16 August 1978 at the Institute of Medicine, Tribhuvan University, with an intake of 20 students for a four-year M.D. (Medical Science Diploma of Doctor of General and Community Medicine) course. This course was initiated because:

(*a*) in the past, high-level health personnel for Nepal had all been trained abroad, in various countries and under various conditions and systems of education. Lower and middle level health manpower were being trained in Nepal and the advantages of having the whole health team trained under a uniform educational system suitable to the country were obvious. Just as training of lower and middle level manpower abroad was not appropriate to Nepalese conditions, orientation courses for doctors returning from training abroad did not remedy the inappropriateness of their training;

(*b*) many students did not return to Nepal after completing their undergraduate medical studies abroad;

(*c*) the plan for the National Education System encouraged the development of an educational ladder. The best students would apply only for entry to the Medical Science Certificate course if an opportunity for subsequent higher-level studies existed. The M.D. course would therefore improve Certificate-level education by attracting abler students. At the same time, Certificate students would be encouraged to continue their medical education by virtue of having already been involved in medical care and preventive health services. An institutional goal of the Certificate-level course was to include basic and applied science instruction in the curriculum so that the students would be able to follow the courses in community medicine and individual medicine both in the Medical Diploma courses and at the Certificate level;

(*d*) lack of medical education was hampering improvements in the health service institutions, and an impetus for study and research in the field of health was lacking.

Although 96% of the people of Nepal live in rural areas, doctors are trained to work in large hospitals (which for economic reasons are situated in cities) or in private practice in urban society. In general, they are reluctant to work in rural areas. It is therefore being realized, on the one hand, that a learning experience of community medicine should have specific objectives and proper evaluation and, on the other hand, that appropriate health care for the majority of the people in the country is best encouraged by teaching in community hospitals and field practice areas rather than in prestigious medical school buildings and postgraduate hospitals. Instead of being part of the basic medical degree, community medicine is often considered appropriate only for postgraduate public health courses. Demography, sociology, nutrition and epidemiology are not included in undergraduate courses; biostatistics, environmental sanitation and health education are not considered suitable work for doctors. Public health is usually taken to be health planning and administration. A few weeks' work in community medicine ("seeing the people") to provide "orientation" and to remedy the bias towards super-specialist hospitals and urban medical practice is not likely to achieve very much of the relevance. Equally, a compulsory rural posting after passing the finals, without first training the students for work in such hospital and community settings may only lead to a situation in which the doctor merely provides primary health care in the limited area of the district headquarters or waits for an opportunity to leave the country.

The role of the community physician

What sort of a physician does the Institute of Medicine hope to produce? By the time he is appointed as a medical officer following an internship he should be as capable of providing preventive and promotive health services in the districts of Nepal as of giving curative and rehabilitative care, through the health teams, whether community or hospital based. Moreover, the physician will feel at home both in community-based services and in hospital-based services. The community hospitals in which he will work are the 15–50 bed hospitals to be established in each district under the Long-Term Plan. The community hospital, through its district health office, is responsible for the preventive, promotive, curative and rehabilitative care of the community of the entire district. The job description of such a physician following his term of residency, as approved by the Faculty Board, is as follows:

Clinical role. Within the professional responsibilities to save life, restore health and rehabilitate by providing medical care mainly through a hospital of a district of Nepal, he will be:–

(*a*) able to institute life-saving measures in emergencies and manage the emergencies;

(*b*) able to diagnose and manage the common diseases of Nepal, including common diseases of children (including neonates and infants) and common obstetric and gynaecological conditions; and

(*c*) able to recognize those conditions that require referral.

Non-clinical role in promotive and preventive health services. Within the professional responsibilities to prevent diseases and promote health, mainly through health office work, he will be:–

(*a*) able to organize maternal and child health and family planning services in the district, initiate and maintain community action utilizing appropriate communication techniques and channels and carry out family planning procedures;

(*b*) having adequate knowledge and understanding of environmental health hazards in the district and their harmful human and ecological effects, able to work with the health team to educate the community in environmental health;

(*c*) able to recognize the prevalence and nature of common nutritional inadequacies in the district and initiate appropriate action to combat them and work with the health team to educate the community in nutrition;

(*d*) working with the health team, able to provide community health education in both hospital and community settings as well as involving local *panchas*, officials and school teachers;

(*e*) able to apply the principles of communicable disease control in the district; and

(*f*) able to organize school health care in the district.

Non-clinical role in planning and management. The professional responsibilities include planning and management of medical care and preventive health services. Hence, he will:

(*a*) be familiar with the health policy, plans and organization of health services in Nepal and able to keep his team appropriately informed;

(*b*) be acquainted with the socioeconomic and cultural patterns of the community including customs, attitudes and beliefs regarding the causes of diseases and their cures, and familiarize himself with indigenous health personnel and their methods;

(*c*) understand community health needs, diagnose the state of health of the district and the common health problems, assume responsibility for the collection and constant updating of appropriate demographic and epidemiological data from the district and be familiar with the social services available to his patients and community;

(*d*) apply the basic data in planning, programming, implementing and evaluating comprehensive health care in the district;

(*e*) acquire a basic understanding of national budget planning and administration;

(*f*) be familiar with those sectors in the district which are important for intersectoral coordination and cooperation;

(*g*) function as the leader of the health care team in the district, supervise the work of health post staff including their practice in Ayurvedic drugs and demonstrate the leadership skills necessary to ensure the effective functioning of the team;

(*h*) be responsible for the orientation of members of the health team and for the maintenance and upgrading of their skills; and

(*i*) be familiar with health regulations and relevant legal responsibilities.

The training of community physicians

Entrants to the course must have undergone, after the School Leaving Certificate: a minimum of a one-year science course of the Medical Science Certificate in General Medicine syllabus or its equivalent (the two-year Tribhuvan University Certificate in Sciences is accepted as an equivalent); a minimum of a one-and-a-half-year course in a major area of the Medical Science Certificate, i.e. general medicine (for health assistants), health laboratory technology, radiography, pharmacy, Ayurved, and nursing; and one year of service in a position relevant to the major area of study.

The Ministry of Health will select 60 candidates for the entrance test from the holders of the Medical Science Certificate who have done a minimum of one year of service. The candidates will be chosen on the basis of their performance in Medical Science Certificate studies and during their service. Those who do not gain admission will be eligible to go abroad for training. After the Medical Science Diploma of Doctor of General and Community Medicine programme has started production, the practice of sending students abroad to train as doctors will be revised and preparations for starting a Ph.D. Degree course in Medical Science at Tribhuvan University will be initiated. Graduates will then have to go abroad only in order to enrich their experience.

The educational programme of the M.D. will take a minimum of four years. It will consist of three years of studies including clinical preclerkship and clerkship, followed by a year of internship. It is envisaged that a University examination will be held after the first three semesters and only those who have passed in all the courses will be allowed to continue with the remaining five semesters.

Courses in the first semester will consist of sciences required in community medicine (demography, sociology, nutrition, epidemiology, biostatistics, parasitology, environmental health, and health education) and skills required for communication with patients. The second and third semesters will deal with the sciences required for individual medicine (anatomy, physiology, pathology, and pharmacology); teaching will be based on knowledge acquired in the Medical Science Certificate courses in these subjects and organized following an integrated "organ system" approach oriented towards the solving of clinical problems.

The fourth, fifth and sixth semesters will be spent in supervised experimental learning, divided equally between work in hospital and the community. Community action will supplement further studies in community diagnosis and the clinical aspects of communicable diseases. Some organ-system learning will continue. Maternal and child health, family planning and the relevant aspects of midwifery (obstetrics) and gynaecology will also be dealt with both in the community setting and in the hospital setting. Some structured learning will continue into the seventh and eighth semesters which will be primarily internship; this will involve experience both in the community and in the hospital.

CONSTRAINTS

In Nepal, which is economically one of the 24 least developed countries in the world, the constraints due to lack of resources are very great. It is hardly surprising that planners themselves often do not believe that their plans will be carried out. In the Institute of Medicine, programmes have started without most of the prerequisite resources; the resources were developed as the programme was running. Obviously, programmes have gone through difficult times and each person involved learned as much as he contributed.

Not the least cause of resistance is the long-standing "foreign degree orientation" which leads to the degree being valued for its own sake rather than as a means of rendering better service to the country. Another problem is that many public health doctors consider that their field is limited to health planning and administration. This is perhaps because these are the areas which lead to the highest posts at home or abroad. Their general conviction that biostatistics, demography, sociology, nutrition, health education and environmental health are not part of public health, and their reluctance to supervise students in the field, reflects badly upon postgraduate public health education abroad.

Perhaps one remedy would be to develop postgraduate courses in community medicine in developing countries in such a way that the qualification can only be awarded when the physician, in addition to the necessary knowledge, can demonstrate the right attitudes over several years of field practice. Sending doctors from underdeveloped countries to developed countries for postgraduate public health qualifications may do more harm than good. Another approach would be to use foreign aid to increase the allowances of basic medical science and community medicine teachers in order to build up a selected cadre of motivated teachers in these subjects.

COORDINATION

Coordination with service personnel is less of a problem than it is made out to be. If there is little coordination, part of the blame naturally belongs to the educationist, coordination being a two-way process. The claim that there was a lack of coordination between the Ministry of Health and the Institute of Medicine has been made from time to time for various reasons, and in spite of the mechanisms of coordination that are built into the administrative structure of the Institute. Obviously, as in all similar situations, some of these have related to personality clashes and struggles for influence. In Nepal, it has taken up to five years to get an idea accepted. It was essential for the Institute of Medicine to be involved with the Ministry of Health in planning and implementation. This was the best way not only of keeping abreast of developments but also of exchanging information. Probing into health service trends is essential, for the educationist has to look further ahead than is customary in health administration. Even more essential is the establishment of a dialogue with the administrators so as to understand their problem as well as to explain the approach and constraints of the Institute. Initial resistance is to be expected. By persisting in the dialogue, however, the advantages of the new orientation of medical education are certain to be perceived.

The success of the Institute of Medicine is in no small way due to its participation in Ministry of Health planning exercises and discussions whenever an opportunity presents itself. While the ultimate responsibility for the shape of the health services rests with the Ministry of Health, the Institute has contributed through its field centres to the basic information upon which the plans were made. At the same time, the Institute has had to develop or revise job descriptions for all categories of health workers in order to be able to plan educational programmes. Some of these health workers already existed, but others like the community physician did not exist and had to be anticipated and created.

The development stage of the Institute of Medicine is now virtually complete. The General Medicine Certificate programme needs to be developed in two, and the Nursing Certificate programme needs to be developed in three of the four developmental regions of Nepal. The continuing needs of the majority of the Nepalese people have been and remain an inspiration to overcome all difficulties.

CHAPTER 6

COLLEGE OF ALLIED HEALTH SCIENCES, MADANG, PAPUA NEW GUINEA:

HEALTH EXTENSION OFFICERS, PAPUA NEW GUINEA'S PERSONNEL FOR HEALTH CARE

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EDITORIAL NOTE

The subjects of this paper, the health extension officers, are the middle-level health workers who are in charge of health centres, supervising the curative, preventive and promotive health care of 5000 to 20 000 people with the help of community health nurses and aid post orderlies in Papua New Guinea.

At present health extension officers receive a three-year training followed by a further year of supervised internship. Three principles guiding the training programme are noteworthy: relevance to the actual working situation, an emphasis on practical experience, and the provision of good role models.

Relevance has been developed by relying increasingly for teaching on experienced health extension officers, and by emphasizing practical and field training, especially during the second year when the students, under supervision, do all the tasks of a health extension officer for a population of 110 000 people. More recently a survey of health extension officers in the field provided feedback to the training programme, and soon a field research project will, among other things, examine the role and work of the health extension officers in practice.

Practical training is emphasized throughout the training, and in all three years the students spend large amounts of time doing clinical work or working in field training situations at general and public health administrative tasks. At the Madang Provincial Hospital, where the first and third years of training are based, there is even a "health centre ward" where the students are in charge and where the third-year students can teach the first-year students.

The provision of good role models is achieved by having the majority of the training posts filled by experienced health extension officers. Until recently, most of the clinical teaching has been done by doctors, but now some health extension officer tutors are receiving extra clinical training in the clinical specialities to become clinical tutors.

Papua New Guinea is a tropical country lying between the equator and latitude 12°S and includes the eastern half of the island of New Guinea, sharing its western border with Irian Jaya, and the islands of the Bismarck and Louisade archipelagos. Rugged, forest-covered mountains surrounding high valleys, coastal plains with vast swamps and river systems, and many islands all divide the country into as diverse and varied ecological systems as may be found anywhere in the world.

The population of the country is about 2.8 million. Population densities in some coastal areas may be as little as 16 per km^2. In the highlands, however, they may be up to 200 per km^2, leading to problems with the traditional system of shifting agriculture and intertribal disputes and fighting due to the shortage of land.

The people of Papua New Guinea may be classified with the Melanesians of the Western Pacific region. There are more than 700 languages in the country. Pidgin English is widely spoken as a *lingua franca* and Hiri Motu is spoken along the coast of Papua. English is the official language of government, education and business.

Social organization in the society of Papua New Guinea is based on the clan system, and land ownership is vested in the clan or in smaller kinship groups. The majority of the Papua New Guineans grow up in villages or hamlets. Houses are generally constructed from local bush materials. Food is derived largely from subsistence horticulture, with staples such as sweet potato, yams, bananas and taro making up a substantial proportion of the daily intake of energy foods and protein.

Social behaviour has been regulated by traditional beliefs of a magical or religious nature and sorcery, and by respect for spirits or ghosts of the ancestors and for places and objects. In particular, these beliefs have greatly influenced attitudes towards illness. Changes have occurred and are continuing to occur within traditional societies, however, especially in those areas having prolonged contacts with outside cultures. Missionary influences together with education, health services, and agricultural and economic development have led to the abandonment of many of the beliefs and practices which previously regulated social behaviour.

ECONOMIC DEVELOPMENT

Papua New Guinea is one of the most recently independent nations, gaining full independence in September 1975. The development of services to the people and the process of localization that has accompanied this change has required very rapid development of education programmes. At present, about 60 % of children are able to attend primary schools and, of those graduating, about 40 % are able to go on to secondary schools. Opportunities for advanced secondary schooling or tertiary education are open to even fewer.

The majority of Papua New Guineans work principally to produce food for their own consumption. The bases of the country's commercial economy are mining and agricultural production. The role of agriculture as an export earner has substantially changed in recent years. In the early 1960s, over 80 % of all export earnings came from sales of agricultural produce; copra, copra products, and cocoa amounted to 76 % of this trade. Since that time, both agriculture and the importance of these two crops have declined. There has been a diversification into the production of coffee, tea and palm oil, and timber products have assumed increasing importance. The big boost to export trade is, however, principally due to copper ore from Bougainville. Economic development has also been concerned with the establishment of import replacement industries and service industries such as building and construction, commerce and transport, which together have become important employers and which contribute substantially to the national economy. It can be said, at this stage of economic and political development, that the country is rapidly moving towards establishing a viable economy. However, in spite of these rapid changes, it still faces a lot of problems which hamper overall development.

HEALTH AND DISEASE PATTERNS

The past 20 years have seen a considerable decline in mortality rates, especially among children. Improved nutrition, the availability of health services, and disease-control programmes have contributed to this decline. These, in turn, represent significant social and economic developments, improved communications, and greater awareness by the people of the need for such advances. The improvements are by no means uniform; in general, coastal and island mortality rates are better than highland ones, and urban better than rural. Birth rates are also increasing due largely to the breakdown of traditional customs which spaced children. The resultant rapid population growth has contributed to the increasing urban migration, although the rural population still makes up about 85 % of the total.

The main causes of morbidity and mortality continue to be infectious diseases, with pneumonia, gastroenteritis and malaria remaining the most important. Meningitis and tuberculosis are also important causes of death, while leprosy, pyogenic infections, skin infections, burns, and trauma are common reasons for seeking medical help. Obstetrical problems are still important, neonatal deaths from prematurity, birth injury and infection are very common, and maternal mortality in some areas may still be as high as 5 %. Underlying many of these conditions is a generally poor state of nutrition.

THE HEALTH CARE SYSTEM

The health care system in Papua New Guinea has a long history of the use of paramedical personnel. Village health workers have been trained since 1902, and in 1913 there was an experiment to train some village women to look after women and children. By the beginning of the Second World War there were some 4000 village health workers.

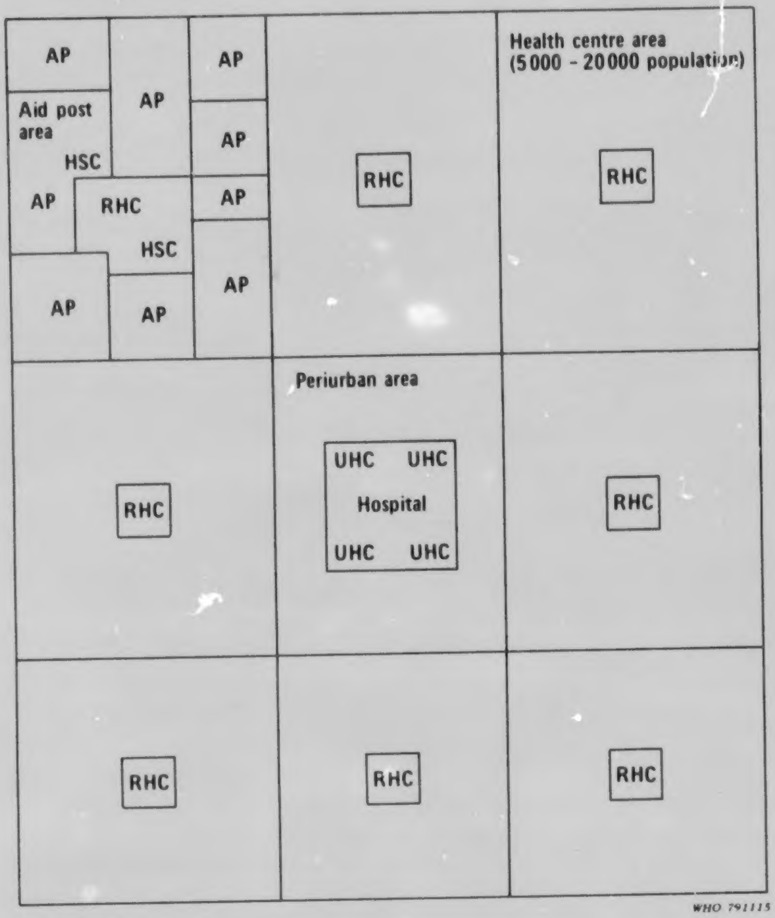
Since the Second World War, the village health workers, who had about three months training, have been replaced by a smaller number of better trained aid post orderlies, and the present network of aid posts, health centres and provincial hospitals has been gradually built up (see Fig. 1). It is a completely nationalized system.

The *aid post* manned by the aid post orderly provides a basic level of comprehensive health services to a defined population of between 500 and 3000 people. The aid post orderly, supplied with injectable procaine penicillin, chloroquine, aspirin, and various topical skin lotions, is able to provide basic outpatient treatment for common ailments and killing diseases. Severe or complicated cases are referred to the health centre. The aid post orderly also gives health education and advice on environmental improvement in his villages, and cooperates with the health centre in disease control and maternal and child health care activities.

Health centres are institutions which provide comprehensive health services to the population of a defined area, usually between 5000 and 20 000 people in an area of 500 to 13 000 km^2. The health centre and its programmes are in the charge of a health extension officer. The health centre provides outpatient care, usually some inpatient care (20–50 beds), aid post supervision, disease control, environmental health improvement and health education. Other desired services, that are not always provided, are mobile maternal and child health clinics and dental health care. Besides

FIG. 1. TYPICAL PATTERN OF DISTRIBUTION OF HEALTH INSTITUTIONS IN A DISTRICT WITH EIGHT HEALTH CENTRE AREAS AND ONE PERIURBAN AREA

Each health centre area has one or two health subcentres and may be divided into eight or nine aid post areas.



WHO 791115

UHC = Urban health centre
RHC = Rural health centre
HSC = Health sub-centre
AP = Aid post

the health extension officer, the health centre is staffed by maternal and child health nurses and orderlies.

Provincial hospitals. Each province has a provincial hospital staffed by at least two doctors, nurses, and orderlies. These hospitals have diagnostic laboratories and radiology and surgical facilities, and they provide health care to the urban and periurban areas in which they are situated, as well as accepting referrals from the health centres. Some provincial hospitals also act as specialist referral hospitals for other provincial hospitals. The provincial health officer is responsible for supervision of all the health services of the province.

Health manpower planning is the responsibility of the manpower planning unit of the National Planning Office and the Health Planning and Research division of the Health Department. The policy of continuing and even expanding the training of paramedical workers is justified both because health extension officers and aid post orderlies are more appropriate than doctors for working in the rural areas, and because the continuing shortfall in the output of national doctors demands either the training of paramedicals, or the importation of foreign doctors who are expensive to employ, usually only stay from two to four years, and are unfamiliar with the national culture and with the health programmes. Between 1974 and 1978 the output of graduate health extension officers increased by about 60%, and it is hoped that by 1983 the number will have increased by another 20%.

THE HEALTH EXTENSION OFFICER: ROLE AND ACTIVITIES

The health extension officer is responsible for effective and efficient delivery of comprehensive health services to the population of a defined health centre area. His responsibilities include the following:

(*a*) *Clinical.* Direct care of inpatients admitted to the health centre including obstetric cases, and referral of those needing more specialized care. Supervision of outpatient care at the health centre, aid posts and health sub-centres (run by community health nurses) in the area, and management of problem cases referred to him.

(*b*) *Community health.* Support for and direction of the maternal and child health clinics and family planning programmes provided by the community health nurses. Support for the antimalaria programme especially through treatment and surveillance at the aid posts and health centre. Control of leprosy and tuberculosis through case finding, treatment, surveillance and immunization. Immunization of children through maternal and child health clinics, school visits or special patrols. Promotion of better nutrition through maternal and child health clinics, schools and in liaison with other agencies. Promotion of improved water supplies, and environmental hygiene.

(*c*) *Administration and health centre management.* Planning and management of the aid post network, and the disease control, maternal and child health, and nutrition programme; management of medical, general and ration stores, office supplies and funds; regular reporting on the health status of the population and activities of the health centre. Cooperation and coordination with communities and local government, church health activities and other government departments.

Promotion and further training for health extension officers may be in any one of several directions for which the health extension officer training provides a basis. Provincial health extension officers are senior health extension officers who fulfil administrative and supervisory roles at a provincial level in support of health centre programmes. Some health extension officers receive further administrative training and become hospital or provincial health administrators; others receive further training in public health or health education and become disease-control specialists or health educators at a provincial or regional level. A few senior health extension officers have become trainers of health extension officers and of other health personnel; some organize and participate in ongoing education programmes.

THE TRAINING OF HEALTH EXTENSION OFFICERS: HISTORY OF THE MADANG COLLEGE OF ALLIED HEALTH SCIENCES

The College of Allied Health Sciences is the only college in Papua New Guinea which trains both health extension officers and health inspectors; in fact, it also takes students from other South Pacific countries such as the New Hebrides, Tonga, and the Solomon Islands. Originally, these categories of health workers in Papua New Guinea were overseas officers in the Australian administration, although a few Papua New Guineans were trained in the 1930s. In the 1950s, five Papua New Guineans were sent to Suva, Fiji, to be trained as health inspectors.

In 1961, the Papuan Medical College at Port Moresby began to train medical assistants (now called health extension officers). This was a one-year postgraduate course for trained male nurses. Later, it was changed to a full three-year course to follow on from a basis of ten years of education.

In 1966, in order to provide a rural practical training setting for second-year health extension officer students, the Community Health Practice Centre was started at the Kainantu Health Centre in the eastern highlands. In 1975, because of increasing numbers of students, the area was extended to include the next health centre area at Okapa, thus increasing to 110 000 the population for whom the Centre is responsible. Most of the senior staff at Kainantu and Okapa are College staff.

In 1967, the training programmes for health extension officers and health inspectors were moved away from Port Moresby to the town of Madang on the northern coast, and the Paramedical College (later renamed the College of Allied Health Sciences) was established in an old-girls' vocational school next to the hospital. In 1977, a grant was obtained from the World Bank for the upgrading of the facilities at Madang. The first and third years of the programme are spent at Madang, and the second at Kainantu.

In 1975, to meet the need for further concentrated, supervised practical experience, the health extension officer residency programme was introduced. During the residency, health extension officers spend six months rotating through different sections of a provincial hospital, gaining further clinical experience under the supervision of the doctors. The other six months are spent at a health centre concentrating more on community health activities under the supervision of an experienced graduate health extension officer.

SELECTION OF STUDENTS

The most common method of entry into the College is direct from form four at secondary school. Form four students at all high schools complete a "leavers form" listing their choices and preferences of work after completion of schooling. The College Education Officer goes to Port Moresby during October to sort through the leavers forms of applicants for the following January.

The school leavers form is a comprehensive form containing academic results, any specific psychological and aptitude test results, together with teachers' comments and the student's choice of career. The College looks for students who have gained upper passes or better in English, mathematics and science, are over 17 years of age and have good reports from their headmaster or guidance teacher. A further element in selection is the desirability of ensuring an even representation from the different regions of the country.

In the past, the College has carried out fairly extensive recruiting tours to interview students at high schools throughout the country. Films about the work of health extension officers and health inspectors are shown to explain the nature of the work, and it is especially emphasized that the work is in the rural areas. From the results of the recruiting tours, the College is able to gain reasonable insight into potential students. It is hoped that this system will be continued in the future.

In previous years, mature applicants have also been able to apply for selection for the health extension officer course. In the main, these have been male nurses, some of whom may already have had experience in running a health centre when no health extension officer was available. The selection of male nurses is gradually being phased out since there are plenty of form four leavers among whom to select future health extension officers; the country cannot afford the expense of training a person twice, and paying him a full salary during his second training course. In 1978, the 72 first-year students included three male nurses who were exempted the first year course since they were familiar with most of the topics concerned; they went straight on to the second-year programme at Kainantu.

Students from outside Papua New Guinea are selected either by WHO criteria (New Hebrides and Solomon Islands) or by Australian Aid Overseas criteria (Tonga) in consultation with the countries' governments.

Papua New Guinea students do not pay fees. During the first and third years, each student receives a living allowance of 10 kina (US $11 approx.) per fortnight from the National Tertiary Scholarship programme of the Education Department. All books, mess fees, accommodation etc. are provided by either the Health Department or the Education Department. During the second year at Kainantu, because the students are actually providing health services to the community, they receive a salary from the Health Department, graduated according to age.

THE PHILOSOPHY OF TRAINING HEALTH EXTENSION OFFICERS

The health extension officer is an intermediate level health worker who is responsible, with a minimum of supervision, for a complex mixture of clinical, administrative and community health duties in a health centre area serving 5000–20 000 people. Three underlying principles have guided the development of the training programme in the past 12 years; relevance to actual working conditions, the provision of good role models, and an emphasis on practical experience. Those principles should be apparent from the following description of the programme, the evaluation of students, the evaluation and modification of the training programme, and the development of training staff.

THE PROGRAMME

The training programme is organized in such a way that in the first year the emphasis is on students gaining appropriate knowledge, skills and attitudes in order to be able to explain the most relevant things they need to know. In the second year, the programme is organized in such a way that students must now apply the knowledge they have gained in the first year. In the third year, in addition to expanding upon and putting into practice the things they have learned in the first and second years, the students are expected to be able to demonstrate an ability to teach. Third-year students participate, under close supervision, in the teaching of first-year students. This is one method of training that enables the staff to assess whether or not the third-year students have the required knowledge, skills and attitudes concerning the most common diseases and community health problems.

First and third year students are based at Madang. Students have access to the training facilities of the College and the practical training facilities of Madang Hospital (300 beds and about 200 outpatients per day). All clinical practical work is carried out in the Hospital and all relevant hospital departments are open for use by the training staff and the students. As well as the clinical studies, the students must also participate in the administration and community health work that are part of the health extension officer's responsibilities. In order to gain practical experience, the student is able to use the facilities of the Usino rural health centre (a working health centre some 77 kilometres from Madang). Students are also involved in community health work in villages around Madang town.

The second year is spent at the Community Health Practice Centre at Kainantu in the eastern highlands; this includes the Okapa health centre area. Kainantu health centre has 100 beds and a daily outpatient attendance of 70 to 100. Okapa health centre has 40 beds. The combined area has a population of about 110 000 served by the two health centres and 50 aid posts. In this area, all the health extension officer's normal activities are performed by the students in rotation under the supervision of the staff.

First year

The first year students are introduced to the health extension officer's work by participating in an intensive six weeks basic science course. The students are subsequently divided into two groups in order to maintain a staff to student ratio of 1:5. The first group has classroom instruction for a fortnight, while the second group is further divided into six sub-groups which rotate through the various departments to participate in practical training experiences. At the end of a fortnight, the two groups are reversed. During their first year, students thus complete at least two weeks full time practical work in each of the following: obstetrics, the health centre ward, paediatrics, the outpatient department, administration, and a community health situation.

Second year at Kainantu

During the second year, students spend the largest proportion of their time in practical work, under the supervision of the training staff. The programme is divided into two halves (approximately 22 weeks each), and the students are divided into two groups. One half of the programme is concerned with training in clinical and administrative skills, while the other part of the programme is concerned with public health programmes and their administration.

Approximately half of the 22-week period is given over to clinical practice, i.e., medicine, surgery, paediatrics (including nutrition), obstetrics, and the outpatient department (adult and paediatrics). The students are divided into sub-groups to participate in these segments. In the wards, the students are responsible, under the supervision of medical officers, for admitting and managing the patient. In the outpatient department, they are supervised by a paediatric nurse. All ward and minor surgical procedures are performed by the students. During this time of clinical work, the students participate fully in hospital work and are also included on the roster for night calls and duty shift work.

The administration segment is spent in the office, handling reports, paysheets, funds, transport, and correspondence. In the medical store and the general and ration stores, stock-taking, ordering, maintenance and dispensing have to be learned. As well as this time spent at Kainantu, the students go to Okapa and Henganofi (another rural health centre) where they are expected to put into practice the administration procedures they have learned at Kainantu.

During the public health segment, the students are subdivided into small groups and spend time rotating through aid post, community health nursing, water supply and environmental sanitation, patrolling, health education (including leprosy and tuberculosis, malaria and venereal disease control), and public health administration segments. During his three weeks at the aid post, the student must work with the aid post orderly learning about his work and also investigating the local customs and beliefs of the people. The three-week community health nursing segment introduces the student to the work of the maternal and child health nurses so that he will be able to oversee or organize the maternal and child health work in his health centre area. During that time the student is also involved with tutorials on child care, antenatal care, family planning, etc. During the water supply segment, students spend two weeks working with the local government council health inspector. They are expected to participate in surveying, installing and repairing water supplies so that they are aware of the work involved and can promote and make initial surveys for water supplies in rural areas. Students also spend another week in a village to learn about village hygiene and sanitation; they must learn how to encourage the village people to improve their own living standards. The health patrols segment is spent patrolling various areas of the Kainantu and Okapa sub-provinces. The students participate in immunization programmes and leprosy and tuberculosis surveys, and gain experience in the follow-up of patients, aid post supervision, school health programmes, and the treatment of diseases in rural populations. Another two weeks of health education involves the students in preparing, practising and delivering health education talks to villagers and schoolchildren. The public health administration segment is spent considering health and disease problems and how best to plan and use the available people and resources to overcome these problems. In addition, students learn how to plan their own time and they draw up programmes for a year to include all that they must do. The students also participate fully in this type of work while they are at Okapa and Henganofi health centres. During the period at these two health centres, the students are also able to put into practice what they have learned during the health patrols segment.

In all facets of training at Kainantu the students are guided by lecturers who are health extension officers themselves (the only exception being clinical work which is supervised by a medical officer).

Third year

The third year students begin the year with a series of two-week block courses in community health, medicine (including dermatology, psychiatry, leprosy, tuberculosis and venereal disease), administration and management (including personnel management), obstetrics and paediatrics. These courses are conducted by persons who are considered to be experts in their respective fields. Visiting lecturers from the community medicine department of the Faculty of Medicine, University of Papua New Guinea, and from the Health Services are invited to participate in these block courses.

After the block courses, the students are divided between the various training disciplines (i.e., health centre ward, outpatient department, community health, child health, obstetrics, and administration); they work for a total of four weeks in each before moving on to the next.

While working in the wards of the Madang Hospital, the students are actually allocated a number of patients whom they manage (from admission till discharge) under the supervision of the senior medical officers of the respective departments within the hospital. The community health and administration segments are problem-oriented. Students are set community health problems and administration problems from the Usino health centre area and it is here that the students are expected to define the problems, suggest appropriate solutions, obtain the resources required and carry out their plans to attack the problems.

This system of training ensures maximum use of the practical training facilities, but even more important, perhaps, is the fact that they are being exposed to the real problems that they will be expected to deal with after graduation from the College.

In the Madang Hospital itself, there is a ward that has been designated a "health centre ward" and provides a situation which more closely approximates to health centre conditions in a rural area. In this ward, the third-year students are left in charge of the management of patients as well as the general administration of the ward. All admissions from within the Madang district are to this ward. The third-year students collect patients' histories, carry out examinations, tests, etc. and are able to determine whether patients can be adequately cared for by themselves in this ward, or should be referred to the medical officer. In the latter case, students refer patients to either the medical ward or the surgical ward, as required. The referral system ensures that students become competent in recognizing those patients whose management is beyond their skills.

Common curricula and integrated teaching

Certain skills and background knowledge are required by both health extension officers and health inspectors. These are covered in a common curriculum including disease control, environmental sanitation, health education and human behaviour, and administration and management.

Some attempts at integrated multidisciplinary teaching are being made at present, but not without difficulties. Recent reviews suggest that graduating health extension officers are unable to look at their role from a multidisciplinary approach. For instance, it is difficult for the health extension officer to relate a disease outbreak to the environmental situation of the community. He will continue to treat the cases but fail to investigate and attempt to remedy the causative situation.

It is proposed that interdisciplinary teaching will initially take place in the clinical department of the school. For example, it is hoped that students who are concerned with the care of sick patients during the course of training in either the medical ward or the paediatric ward of the Madang Hospital will be involved in following up the cases right through to the patient environment. This implies that teaching staff from the clinical department, the administration and management department, the community health department, and the communication department of the school will be involved in the follow-up of particular cases. To illustrate this point further, if a patient comes into the medical ward with gastroenteritis the students will, in addition to caring for the patient, actually go out to the village from which the patient came and try to investigate the source of the sickness. Having found the source, the student will be required to carry out activities to remedy the situation. This might involve the provision of a safe water supply together with health education on the use of safe water. This, in turn, would involve the organization and management of the required manpower, money and material needed to construct a well or a piped water supply. As this example shows, all the departments of the school will be involved in the interdisciplinary teaching. Teaching will start from the classroom, continue in the hospital wards, and follow through to the village from which the patient came with the disease. In this example, the students' learning experience will involve a whole cycle, from curing the disease to attempting to prevent more people from contracting the disease by the construction of a safe water supply.

THE TEACHING STAFF

As well as giving the health extension officer as good a preparation for his work as possible by making the training programme practical and relevant, the College seeks to teach appropriate attitudes and motivation by the provision of good role models and a strong sense of professional identification. The present teaching staff of the College at Madang and Kainantu includes four physicians, twelve health extension officers, two educators, and one health educator (a health extension officer). As well as these, the senior medical staff at Madang Hospital participate in the classroom and practical training of the students.

All the health education officer staff are themselves graduates of the College who have had at least three years practical experience in the field and can therefore teach from the background of real experience of rewards and problems. The six-month residency period spent with an experienced health extension officer in his health centre helps further to strengthen identification and motivation. Health extension officers also have their own professional association which acts both as an industrial body and seeks to further the interests of the College and its graduates through a newsletter and other activities.

The College has implemented an apprentice type system of training health extension officers for clinical tutor positions. This was done because it is recognized that experienced expatriate medical officers will eventually leave Papua New Guinea and it has not yet been possible to train sufficient national medical officers to take over the teaching positions currently held by expatriate officers.

This clinical training scheme began in 1977 with one health extension officer who spent 12 months with two of the doctors at Madang Hospital learning the clinical aspects of both general medicine and paediatrics. He then spent three months with the resident medical officers at Port Moresby General Hospital doing the same work as the residents. This person eventually chose to specialize in paediatrics. In 1978, two health extension officers carried out the same type of training. The clinical training scheme aims to teach selected health extension officers all the aspects of teaching and practice in a specialized clinical field, so that eventually the College will be dependent on its own training staff and will not have to rely on medical staff who are deeply involved with their hospital duties. Obviously, it is not yet possible to judge the success of the scheme, but the College intends to evaluate it at the end of 1979. If it is found that the scheme has been a success, and that a health extension officer can indeed cover the work done by a medical officer, the College hopes to provide more specialized training for other health extension officers in medical fields such as obstetrics, surgery, general medicine and paediatrics.

TRAINING OBJECTIVES AND PROGRAMME EVALUATION

The objectives of the training programme for health extension officers are based on their roles in the health services of Papua New Guinea. These, in turn, were derived from an analysis of the needs of the community. Each of these steps has been subject to evaluation and re-evaluation as the state of the community's health, the college's understanding of it, and the ability of the health services to respond have changed over time.

Community needs can, in part, be defined from statistical data on health and disease collected and analysed at national level. Such an overview must be greatly elaborated in specific regional terms at provincial level by provincial health committees made up of the provincial health officer, his staff, and the health extension officers in charge of the health centres. Unfortunately, there is very little direct participation by communities in the identification of community needs. A certain amount is achieved through local government council health committees, but the present belief is that aid post orderlies, health extension officers and other health workers in close touch with the community are in the best position to interpret and voice community needs. The rationale for this kind of approach has to be understood in the context of the very wide range in the level of sophistication of communities in Papua New Guinea.

While there are basic needs common to all parts of the country, the varying ecological and cultural patterns and the different levels of socioeconomic and health service development mean that the specific roles and activities of health workers have to be determined locally. These variations have also to be borne in mind in the design of the health extension officer training programme and its objectives.

As yet, no in-depth study has been made to assess the effectiveness of the training programme and its curriculum. The first attempt at evaluation was made in 1970–1971 when staff from the College interviewed 37 health extension officers practising in the field, using an extensive questionnaire covering all aspects of their work, as well as allowing them the opportunity to talk about any problems they had encountered. Some independent checks were made by observation or by talking to the provincial health officer or provincial health extension officer but, in general, the health extension officers were very frank about what they were and were not doing.

This survey had several results. First, it confirmed that the job description of a health extension officer was appropriate for the health services of Papua New Guinea. Although generally favourable, it revealed some difficulties and deficiencies. Consequently, various parts of the curriculum were given added emphasis. Much more stress was laid on practical experience of procedures during training; in particular, the residency programme was instigated in order to increase both the ability and the self-confidence of the graduates. New procedures were devised to make some tasks easier, e.g., an imprest system for ordering medical supplies. The need for better understanding of the role of health extension officers by doctors and for coordination and integration of the work of different health workers, and the specific needs of the residency programme have led to greater clarification and information about health workers' activities. The adoption of standardized clinical management regimes throughout the country for all health workers has been another side-benefit. The survey also helped to give some feedback on the sort of people who are most suitable to be selected and trained to be health extension officers.

The most recent independent review of the health extension officer curriculum was undertaken by a WHO consultant in 1972 at the request of the Papua New Guinea Health Department. The College felt that the syllabus produced by this consultant was too general to be of much help to the training staff (most of whom have no formal teacher training) in developing teaching programmes. Two things have been done to remedy this situation. First, the College asked the Department of Health to help form an *ad hoc* committee to carry out a review of the objectives of the training programme and its curriculum. This committee was made up of representatives of the different divisions of the Health Department, members of the College staff and the Health Extension Officer Association, representatives of provincial health staff and the hospitals where training is carried out, specialist physicians, and representatives from the Education Department.

Secondly, there was a reorganization of the administrative structure of the College which included the formation of a specific curriculum subcommittee. This committee has been systematically working through all aspects of the training programme defining specific training objectives and the intermediate objectives according to subject and year of training. This is a long process which is only partially completed.

The College recognizes the need to carry out a fuller evaluation of the role of the health extension officer. To this end, it is about to undertake a research project on the evaluation of community involvement in three rural health centre areas of Papua New Guinea. This is to be a three-year study, funded by the International Development Research Centre of Canada, and beginning, probably, in mid-1979. The objective of the study is broad, but it is hoped that it will indicate the areas in which the training of health extension officers needs to be strengthened.

CONCLUSIONS

The decision to train health extension officers in Papua New Guinea was not an easy one to make. As noted above, the shortage of medical manpower and financial resources, the geographical features of the country, the population distribution, and the patterns of disease all made it necessary to find an alternative to the fully trained physician.

The training of health extension officers is now in its seventeenth year. It has come a long way, but the present level of training has been reached only by trial and error. The College has gone through some very difficult periods in gaining acceptance of the health extension officer by the national authorities. Acceptance by rural communities was much easier because health extension officers met their needs. Difficulties in training have included lack of adequate facilities, an inadequate staff establishment, and the problem of obtaining the participation of suitably motivated doctors.

In retrospect, it can be said that it might have been much easier, and many of the difficulties might have been avoided, had better planning started at the beginning. A clear job description would have helped avoid duplication of work done by other health workers, and might have helped to allay the fears of other health workers, the medical profession, and national authorities. Task analyses would have made the training process that much easier to develop. Development of a career structure for the new category of health worker would also have avoided a lot of unhappiness and disillusionment for some of the health extension officers. In reality, such planning is hampered by so many uncertainties that it can only be accomplished step by step.

Health auxiliaries have proven their worth in Papua New Guinea, with the result that the country believes in them and is now committed to them. Perhaps for this reason, more than any other, the medical profession in the country has allowed the College to develop medical auxiliary training programmes which are more extensive and sophisticated than in any other country in the region. This, in turn, has led to improved performance of the health extension officers in the field and given them a sense of professional pride in their work.

UNIVERSITY OF THE PHILIPPINES COLLEGE OF MEDICINE, PHILIPPINES:

THE INSTITUTE OF HEALTH SCIENCES, TACLOBAN—SEARCH FOR A MODEL

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EDITORIAL NOTE

This exciting new programme arose from the need to provide health workers at all levels for badly underserved regions of the Philippines. The programme recruits personnel from the poorly served rural areas and is oriented towards keeping them there after training. For this and other reasons it attempts to make sure that training emphasizes relevance rather than academic excellence.

The students are selected by the communities, and then enter upon a ladder-type programme with various points of entry and exit. The first stage trains students to be barangay *health workers, then on through a series of health worker levels and eventually, in the maturity of the programme (not yet reached), to an MD degree. After each stage of the training programme the students have to return to the community to carry out the work for which they have been trained.*

Advancement to the next level of training depends upon the needs of particular communities, the aptitudes of the students, and whether they have performed satisfactorily in the work they have been given to do. This reflects the fact that the clients of the training programme are the communities, and not the students.

Because of the great need for health workers, and the heterogeneous levels of background education of students, great emphasis has been put on formative evaluation and remedial learning opportunities.

This unique approach to health services and manpower planning is made possible through formal agreements between the University and the Department of Health and the sharing of senior members of staff, and is facilitated by the fact that the Director of the training institute is also the Director of the regional health services.

Among the developing societies making up the Third World, the Philippines, a country of about 45 million people, is probably one of the very few that can justifiably claim to have a truly extensive system of education. It has many prestigious educational institutions, one of which dates as far back as the early part of the 17th century.

Notable among the many colleges and universities in the country is the University of the Philippines, a State-supported university established in 1908. Its medical college, backed by a strong faculty, is, by common estimation, on a par with the best in the world. It is engaged mainly in the production of physicians who help to man the country's tertiary level of health care and who provide leadership for the various health programmes of the Government.

Aware of its responsibilities to the national community and seeking to make itself directly relevant to the health needs of the rural people who constitute almost 70% of the population, the University of the Philippines College of Medicine, with the approval of the Board of Regents and the active support of the provincial and national government, established in 1976 a medical school in Tacloban, Leyte. This school, now known as the Institute of Health Sciences, is intended to achieve two closely related objectives. One is to produce a broad range of health manpower that will serve the depressed and other underserved communities in the Eastern Visayas Region (the islands comprising Samar and Leyte), and the other is to design and test programme models for health manpower development that would be replicable in various parts of the country and, it is hoped, in other countries where conditions are similar to those of the Philippines.

To appreciate better the programmes of the Institute, it is well to keep in mind that, in the Philippines, it normally takes nine years for the standard medical school to produce a physician, i.e., counting from the time a student finishes the secondary school (high school). In addition, the product of the medical schools, like their counterparts elsewhere in the world, are generally disinclined to serve in the rural communities where their services are badly needed.

In the Philippines, no student is accepted by the medical school unless he has a baccalaureate degree in a field weighted heavily on the side of the natural and biological sciences. Medical schools have rigid entrance requirements as they try to select only those with very good scholastic records. In the University of the Philippines, the competition for places in the medical college is intense. This, in part, serves to explain the disinclination of most medical graduates to practise in the rural areas, the selection mechanism of the University tends to favour those who come from the privileged sector of the national community.[1] Students of this class origin have been brought up in a culture that predisposes them, as it were, to practise in the urban centres. What is known as the brain drain problem and the related problem of maldistribution of health manpower are, to some extent, a function of the achievement orientation that prevails in the medical schools.

There are many other reasons why medical graduates tend to concentrate in the urban centres. One of these is the fact that standard medical training seems, by its very nature, urban-oriented. Its emphasis on sophisticated medical technology and the thrust towards specialization tend to render the medical graduate unfit for rural practice. In addition, the specialist orientation of his medical education could give him some feeling of inadequacy as he is made to confront medical problems that are, to his mind, beyond his area of competence. To be effective in the rural community, the health worker must be some kind of generalist, or general practitioner.

This is not to suggest that to solve the problem of maldistribution of health manpower or, to put it another way, to channel medical graduates to the rural areas where they are most needed, all that should be done is to reorient the medical curriculum away from specialism. There is a need for the specialist, but there is also a need for people who will refer cases to the specialist. The imperative is to develop an adequate health manpower support system consisting of people of various levels of competence and interest.

It should be noted, however, that alongside the need for a large pool of primary health workers, there is a need to transform the medical schools, particularly those in the Third World countries, into training institutions

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[1] A recent study has shown that 50 % of students who passed the University's entrance examination come from families belonging to the upper income bracket (with annual income of US $2700 or more). On the other hand, only 12 % come from families belonging to the lower income bracket (with annual income of US $700 or less). The latter group includes almost 80 % of families in the Philippines.

alive to the requirements of the larger segment of the population. These medical schools, among other things, must be weaned away from their over-dependence on models provided by economically and technologically advanced societies.

THE INSTITUTE OF HEALTH SCIENCES

The Institute of Health Sciences in Tacloban, Leyte, has been called an experimental school. This appellation is appropriate, for, indeed, the Institute is trying out new approaches and strategies in the development of health manpower in the context of Philippine conditions.

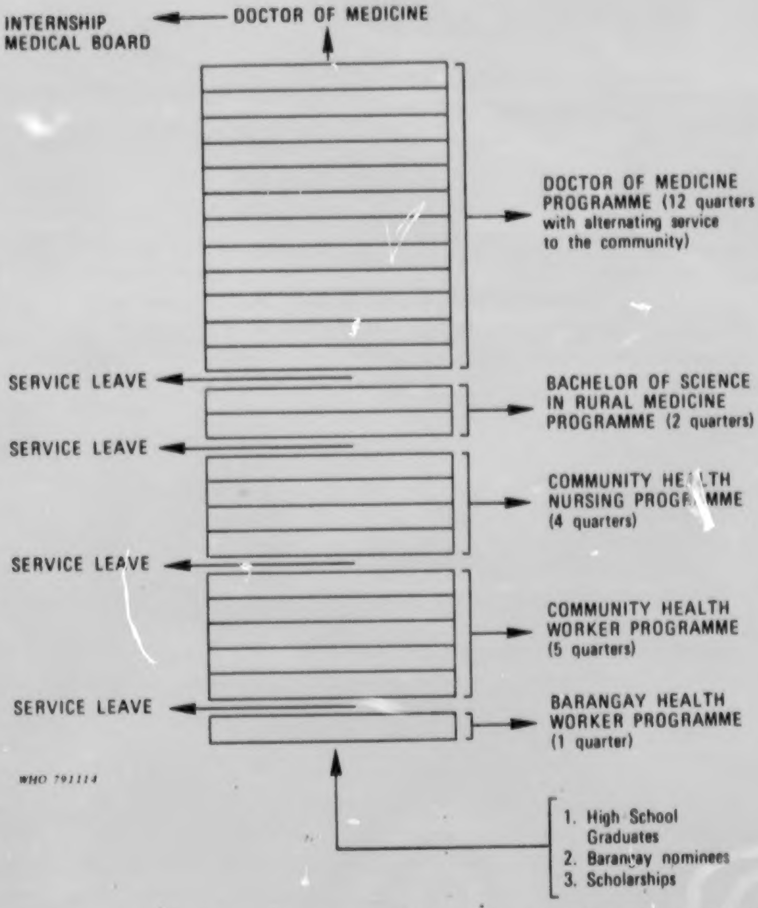
Unlike the traditional medical schools, the Institute of Health Sciences is not concerned exclusively with the training of physicians. Its curriculum has a ladder type structure (see Fig. 1) with various points of entry and exit. Students admitted to the programme initially go through what is popularly known as paramedical training, or the Barangay Health Workers programme. This programme consists of 11 weeks of training covering such subjects as paediatrics, obstetrics, nutrition, community hygiene and sanitation, fundamentals of health care, and emergency care. The Institute's academic calendar is divided into four quarters, each quarter consisting of 11 weeks.

After the initial training on subjects specifically oriented to the needs of the rural communities, the students return to their respective *barangays* where they perform activities that require them to apply the knowledge and skills they have learned. This service leave, as it is called, lasts for three months. As the students leave for their *barangays*, each is provided with a checklist of activities. These activities include assessment of the health needs of the community and planning, implementing and evaluating health services, particularly in such areas as family planning, nutrition, environmental sanitation, maternal and child care, control of communicable diseases, treatment of common illnesses, first aid and emergency care.

The Barangay Health Workers programme of the Institute is not intended as a terminal programme; rather, it serves to initiate the student into community health work and enables him to determine for himself whether he is inclined to engage in such work. The programme also serves to initiate the community into the all-important tasks of providing the student with both moral and material support as he performs the various activities assigned to him, and of assessing the ability of the student whom they have recommended for training. During this service leave, the Institute mobilizes the rural health units to assist and contribute to the evaluation of the student's performance. At some time during this period, staff members of the Institute visit the community and the student to strengthen the linkages established between them.

If the student satisfactorily performs his tasks and if he is endorsed by his community, he returns to the Institute to follow the next programme, the Community Health Workers programme. Completion of this programme

FIG. 1. THE LADDER TYPE CURRICULUM OF THE INSTITUTE OF HEALTH SCIENCES


INTERNSHIP
MEDICAL BOARD
DOCTOR OF MEDICINE
DOCTOR OF MEDICINE PROGRAMME (12 quarters with alternating service to the community)
SERVICE LEAVE
BACHELOR OF SCIENCE IN RURAL MEDICINE PROGRAMME (2 quarters)
SERVICE LEAVE
COMMUNITY HEALTH NURSING PROGRAMME (4 quarters)
SERVICE LEAVE
COMMUNITY HEALTH WORKER PROGRAMME (5 quarters)
SERVICE LEAVE
BARANGAY HEALTH WORKER PROGRAMME (1 quarter)
1. High School Graduates
2. Barangay nominees
3. Scholarships

WHO 791114

entitles the student to a Certificate in Community Health. This certificate was originally called the certificate in midwifery; the Institute was led to change the title, however, because the male students were not exactly happy to be called "midwife". In addition, the knowledge and skills which the programme develops go beyond those of midwifery. The students are expected not only to perform the tasks ordinarily reserved for midwives but also to act as agents of change in their respective communities. What necessitates the broadening of perspectives at this point is the fact that health problems, so called, cannot be isolated from other social, economic, or even political problems. It is for this reason that the training provided in the Institute includes an understanding of the dynamics of community life and the development of skills in organizing and mobilizing the community.

The Community Health Workers programme lasts for an additional five quarters of work and covers a variety of subjects in health and the behavioural sciences (see Table 1). Among these are English, mathematics,

TABLE 1. INSTITUTE OF HEALTH SCIENCES: INTEGRATED CURRICULUM

First quarter (BHW)*

Courses	Units
Health care A	3
Nutrition A	3
Obstetrics A	3
Community hygiene and sanitation	3
Paediatrics A	3
	15

Second quarter (CCH)*

Courses	Units
English A	3
Fundamentals of anatomy physiology A	5
Obstetrics B	3
Health care B	3
	14

Third quarter (CCH)

Courses	Units
English B	3
Mathematics	3
Sociology	3
Obstetrics C	3
	12

Fourth quarter (CCH)

Courses	Units
Nursing A	3
Biostatistics and community health	5
Logic	3
Psychology	3
	14

Fifth quarter (CCH)

Courses	Units
Ethics A	3
Microbiology	5
Public health A	3
Nursing B	3
	14

Sixth quarter (CCH)

Courses	Units
Ethics B	3
Medical surgical nursing A	3
Public health B	3
Philipino A	3
	12

Seventh quarter (CHN)*

Courses	Units
Nutrition	3
General chemistry	5
Philipino B	3
Anatomy and physiology B	3
	14

Eighth quarter (CHN)

Courses	Units
Medical surgical nursing B	3
Mental health and community development	3
National health plan	3
Tropical and communicable disease nursing	5
	14

Ninth quarter (CHN)

Courses	Units
Principles of management in nursing	3
Principles of teaching	1
Nursing perspectives	3
Philippine Government	3
Philippine history	3
	13

Tenth quarter (CHN)

Courses	Units
Pharmacology	3
Practicum	12
	15

TOTAL UNITS 137

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* Integrated curriculum for Barangay Health Worker (BHW), Certificate in Community Health (CCH) and Certificate in Community Health Nursing (CHN).

ethics, fundamentals of anatomy and physiology, psychology, microbiology, public health, sociology, and obstetrics. The courses prescribed for this programme are in part determined by the governmental rules pertaining to the midwifery curriculum and also by the fact that passing the Government's board examination is a prerequisite to the practice of midwifery. Thus, even though the Institute wishes to create a programme that is specially tailored to the needs of the rural communities, it cannot do so in disregard of the existing governmental regulations which may not coincide with the Institute's aims. It is hoped that, as a new attitude emerges, and due attention is paid to the needs of the rural communities, governmental regulatory schemes, particularly those that pertain to the accreditation of health competence, will correspondingly change to allow medical schools more flexibility in designing their curricula.

Students who complete the Community Health Workers programme once again return to their respective *barangays* for their second service leave. With a deeper and broader knowledge, they engage in equally broader and more meaningful activities. Visits by staff of the Institute continue and sensitization of the communities is intensified. Students are now expected to play a more active role in community development. As they are later to take the Government's examination for midwifery, they have to comply with Government requirements such as that a midwifery graduate must have carried out as many as twenty deliveries to qualify for the midwifery board examination.

After the second service leave, students are again evaluated by the Institute staff, by their communities and by the rural health units in their respective areas.

Students who perform satisfactorily during the second service leave return to the Institute where they prepare for the midwifery board examination. At this point, some students are selected to enter the Community Health Nursing programme while others are required to stay at the level of community health workers. The decision as to whether the student shall follow the Community Health Nursing programme (the third level) depends upon a number of factors, the most important of which is the need of the community for a health worker. Where a community is badly in need of a health worker, the student, now a qualified midwife as far as the Government's regulations are concerned, is required to remain in the community. He may join the Community Health Nursing programme later, as the situation in his community improves. It should be emphasized that students who are required to remain in the community are not excluded from the Institute's programme. On the contrary, their tie with the Institute now becomes firmer; they become, in fact, fully fledged health workers. In this capacity, they are expected to set up their own health programmes, fashioned after the needs of their respective communities. The Institute, in turn, follows up their progress and establishes a more viable link between them and other Government agencies, such as the rural health units under the Department of Health and the agencies under the

Department of Local Government and Community Development. Apart from the community itself, both these agencies serve as absorbing and supporting mechanisms for the new health workers. In the Eastern Visayas Region especially, there are places in the rural health units awaiting the graduates of the Institute.

The Community Health Nursing programme covers four additional quarters of study (see Table 1). The programme includes instruction in basic chemistry, chronic and communicable diseases, nursing, pharmacology and folk medicine, anatomy and physiology and other subjects prescribed in the nursing law.

A feature of the Institute's strategy is the emphasis on community-based training. As far as practicable, training is freed from heavy dependence on a hospital setting. This is particularly true of the Community Health Nursing programme.

Immediately prior to the M.D. course is the new Bachelor of Science in Rural Medicine programme, which is completed in two additional quarters of work. The Bachelor of Science in Rural Medicine degree is on a par with any baccalaureate degree awarded by the universities. Those who complete this programme stand at the midpoint of the health manpower spectrum which stretches from the paramedical Barangay Health Worker to the physician. Being at the midpoint of the spectrum, they are expected to play a crucial role in the referral system. They serve to fill the gap between those who form the core of primary health workers and those who are at the top of the health manpower hierarchy.

The Institute's training programme is to be completed by the M.D. course which is still at the planning stage. As envisioned, the M.D. course will last two years and have a curriculum largely determined by the needs of the rural communities. Students following the M.D. course will travel back and forth to their communities for their service leave. The net effect of this scheme will be that, as they progress in their medical studies, their contact with the community will be maintained. Moreover, students at an early stage of the course will be able to begin rendering service to the community. This service parallels to some extent the internship service which their counterparts in traditional medical schools provide only at the end of their medical studies.

ADMISSIONS POLICY

The Institute benefits from the flexibility accorded it by the University administration. In recruiting its students, it is not obliged to follow the standing policies of the University on admissions. Instead, it is allowed a great deal of freedom in setting up its own admissions policies and procedures consistent with its special objectives.

As noted above, the admissions requirements of traditional medical schools tend to discriminate in favour of students from families belonging to the higher income group. To be sure, this discrimination is not by design.

It is not even, as some might suppose, entirely a function of the kind of test being administered. In the University of the Philippines, for instance, the admissions test covers basic skills in language (i.e., English), in mathematics and in science. Studies conducted on the admissions profile of the University indicate that students coming from the higher income group have the advantage over those from the lower income group mainly because the former have had more and better educational opportunities. There are other reasons why the balance is almost inevitably tilted in favour of those who come from the well-to-do families. In the Institute, this bias is reversed; the discrimination, if it may be called such, is in favour of those who belong to the lower income group.

The initial phase of the Institute's recruitment procedure involves the identification of *barangays* in the depressed areas of the Eastern Visayas Region. This is accomplished with the help of the Department of Health of the Region and the Department of Local Government and Community Development. As soon as a *barangay* is identified, an information campaign is set up to explain what the Institute's programme is all about. Thereafter, the *barangay* is required to hold an open meeting to nominate one of its young people for admission to the Institute. In effect, the client of the Institute is not the student but the *barangay*. In fact, it can be said that the entire programme of the Institute is not designed for the benefit of the student but for the benefit of the *barangay* or community whose health needs must be served.

As regards the *barangay* nominee, the Institute requires that he or she be a high school graduate no more than two years out of school, a resident of the *barangay* for at least one year and willing to return to the *barangay* after training. The *barangay* is expected to provide its candidate with money for transport to and from the Institute in addition to committing itself to provide the student with various forms of assistance during his or her service leave. While at the Institute, the student is provided with a full scholarship, free board and lodging, plus a modest stipend. This scholarship support is absolutely necessary since the student, coming as he or she does from a poor family, cannot afford the cost of training at the Institute.

A unique feature of the Institute's admissions policy is that it does not require the candidate to pass any entrance examination. The mere facts that the candidate has successfully completed high school and has been nominated by his *barangay* are deemed sufficient. No doubt, by dispensing with a screening mechanism, the Institute finds itself saddled with a number of students whose academic abilities are somewhat below the standards set by other schools. But, in a sense, the decision to admit this type of student is inevitable; for to be selective in the way other schools are would leave *barangays* without qualified candidates. As it is, there are *barangays* that do not have a young person who is a high school graduate. It is important, as far as the Institute is concerned, that the health worker to be trained for the community should come from that same community. As some studies have shown, such a health worker is more likely to remain in the community after training than someone whose place of origin is elsewhere.

There is no reason to suppose, however, that the students of the Institute are uniformly of low-level competence. In fact, the majority are above average in abilities and some are outstanding. Besides, in so far as the Institute inclines towards the development of practical rather than theoretical skills, certain academic abilities so highly valued by other schools are actually reduced in significance. For instance, the Institute does not put any premium on the student's ability to speak or write in English. All that it expects of the student is to be able to comprehend written materials in English. The medium of instruction is a mix of English, the national, and the regional language. Even courses like sociology, psychology and ethics are slanted towards practical rather than theoretical issues; all are geared to getting the student to understand his own community and thus enabling him to become an effective agent of change.

TEACHING

In a sense the Institute is engaged in a multiple experiment. In view of the heterogeneous nature of its students, particularly as regards academic abilities, it has dispensed with the standard grading system that awards numerical equivalents to the quality of the student's performance. In the courses, a student is rated in terms of whether he has passed (i.e., reached the minimum acceptable level) or needs more instruction in certain branches. Faculty members are required to indicate exactly in which aspects of the course the student is deficient. It is for this reason that the general and specific objectives of each course are carefully spelled out. The Institute has a tutorial scheme which provides students who are lagging behind with individual tuition. These tutorials continue until the student finally makes the grade. There are, of course, students who seem to be unable to handle materials, no matter how many tutorials they attend. Cases of this sort are rare, and such students are not selected to move on to the next level.

The Institute's Barangay Health Workers programme is intended in part to serve as a kind of screening mechanism for students who prove to be unteachable. It is unlike the usual entrance examination since it does not prejudge the student's ability to handle the programme material. There are students at the Institute who perform magnificently but who would not have been admitted on the basis of standard admissions criteria. One such student scored only 9% in the National Collegiate Entrance Examination, a Government-required examination for all high school students intending to go on to college. After taking time to find his feet, the student became one of the best in the Institute. Certainly, the instructional scheme operating at the Institute demands a great deal from the faculty members. The almost individual instruction forces staff to vary their approach to teaching. In addition, the emphasis on practice rather than theory leads them to go beyond the confines of the classroom and into the community. Practically every course in the Institute features field work, with the communities adjacent to the school serving as laboratories. For such a scheme to be viable, the Institute must not be allowed to grow out of proportion. Thus, the Institute is not conceived as expanding to become a huge institution. It is intended to be small, with the number of students levelling off at about 300. At present, the Institute has 12 full-time faculty members, qualified in the behavioural and medical sciences. These 12 (expected to increase to 15 by the next academic year) are supported by a large pool of lecturers, most of whom are personnel of the Department of Health of the Region.

EVALUATION

Apart from its academic programme, the Institute has an ongoing research and development programme whose principal objective is the continuous assessment of the Institute's curriculum and training strategies.

Essentially, the research and development programme serves the Institute, by monitoring information on the real needs of the communities as well as other data relevant to programme development. This programme has already led the Institute to modify its recruitment procedure. Students in the initial entry all had the impression that, provided they maintained good scholastic standing, they would eventually follow the M.D. course. Thus, they all looked forward to becoming physicians. It therefore was difficult for the Institute to leave some students out of the programme on the strength of their being needed at that stage by their communities. Such students naturally felt disappointed with the Institute's decision to return them at once to their communities. They failed to appreciate the fact that the need of the community for a health worker is fundamental to the Institute's evaluation mechanism. In view of the research and development programme findings, the Institute altered its strategy to that of recruitment for specific levels, e.g., for the level of community health worker or community health nurse. Upon completion of the programme for which they are recruited, students return to their community to render service as health workers. Recruitment for succeeding levels is made independently, without prejudice to those who are not products of the Institute but who have the requisite qualification for training. This modular recruitment scheme is an innovation calculated to solve the problem generated by the unintentional infusion of expectation into students' attitudes.

The research and development programme study noted another weakness in the recruitment procedure. The age range of the first batch of students ran from 17 to 28 years, and some of the older students had previous college experience that placed them ahead of the younger ones in academic competence and maturity of outlook. This heterogeneity made it very difficult for teachers to adjust their perspective and teaching strategy. To solve this problem, the Institute now requires that entering students have left school no more than two years previously. With this new provision, succeeding groups of students became more homogeneous in character.

Another important role played by the research and development programme is in the follow-up of students who return to their communities. The job of the Institute is not finished once the students are awarded their certificate and have passed the midwifery or nursing board examinations. In addition to assisting the students to cope with the governmental examinations, the research and development programme staff assist the graduates to set up health programmes in their communities. The research and development programme staff work with the staff of the Department of Health and the Department of Local Government and Community Development in the area to provide the "graduates" with various forms of support.

The research and development programme places special emphasis on the study of the processes by which health programmes are developed and the processes that occur in the *barangays* and in the health care delivery system of the various governmental agencies. Essentially, the object is to provide a clear picture of how a community responds to a health programme and how various institutional elements within the community might be mobilized to ensure the success of a health care delivery system.

RETURN OF STUDENTS TO THEIR COMMUNITIES

An issue raised in connection with the Institute's programme is whether there is any guarantee that after his training the student will return to serve his community. The fear of some is that the student will ultimately abandon his community and move on to an urban centre in search of better opportunities. It is for this reason that some have proposed that students trained at the Institute be bound by a legal contract that specifies, say, two years of mandatory service to the community for every year of training. So far, the Institute has not felt the need to adopt this proposal. Consistent with the idea that it is engaged in an experimental venture, the Institute prefers not to make use of the force of law to bind the student to serve his community. Besides, it has been argued by others, it would be unfair to bind the students of the Institute, all of whom come from the lower income group, by a legal instrument without imposing the same obligation on the students, say, of the State medical colleges who are effectively subsidized by the State for the duration of their medical studies. At any rate, at this stage, the Institute seeks to use or create more natural ways of ensuring that the student returns to his community.

The fact that the student is drawn from the very community he is being trained to serve is itself a critical factor in his decision concerning his future. Part of the Institute's programme is designed precisely to sensitize the community not only to be aware of the programme but also to be ready to play an active role in providing the student with both moral and material support in planning and implementing his health programme. Underlying this is the principle that the community is not a passive recipient of services but an active partner in the effort to improve the health condition of the people. There are already encouraging signs, and many communities have responded enthusiastically to the student's service leave programme. More specifically, some communities have gone as far as building health centres for the students, i.e., places, usually made of indigenous materials, where the student, as health worker, can hold clinic hours. Some communities have also responded to the students' programmes for building water-sealed toilets, draining swamps, etc. The net effect of this enthusiastic community response is, to say the least, a clear and positive encouragement for the student to persevere.

As noted earlier, in the Eastern Visayas Region where there is an acute need for health manpower, many undermanned rural health units are ready to absorb graduates of the Institute. This means that students of the Institute are not left looking for a place where they can apply their knowledge. In practice, each of the Institute's present crop of students is assured of a position in the health care delivery system of the Region.

Even if a student is not absorbed into a rural health unit, he may be absorbed by the local agency of the Department of Local Government and Community Development. It should be stressed in this connexion that the Institute's students are trained in the area of community development. It is clear that the student does not enter a community exclusively as a health worker. Health is not a phenomenon isolated from others. The very idea of preventive medicine shifts the focus from merely treating illnesses to mobilizing the community to engage in activities conducive to a healthier environment.

All this presumes that the students will join the ranks of workers in governmental institutions operating in their respective areas. It is possible that a graduate of the Institute could practise alone as a health worker in his community, surviving solely on community support. The traditional birth attendants and healers depend a great deal upon the support of the community; there is thus reason to believe that the graduates of the Institute could also function independently.

These conditions do not, of course, guarantee that the students of the Institute will all return to their respective communities. The Institute is, however, anxious, at this stage, to create, with the support of other governmental agencies, those conditions in the community that would induce the student to return even in the absence of any legal contract.

The programme of the Institute does not concern itself merely with the development of knowledge and skills in the students. The development of attitude is an important dimension of the training. This is no doubt a concern that the Institute shares with other educational establishments. To put it simply, the entire programme of the Institute is built around the ideology that a greater meaning to life is to be found in the service of the people. Just how far the Institute succeeds in developing in its students an active commitment to this ideology is difficult to assess at present, since commitment will be quantifiable most clearly in practice. The staff of the Institute exemplify a practical application of this ideology, working, as they do, away from the urban centres, especially Metropolitan Manila. The basic imperative for an educational system, if it is to be true to its mission, is to temper materialism with idealism. To this imperative, the staff of the Institute is devoutly committed. Perhaps ideology will prove to be a much stronger and more enduring bond than that which is forged by law.

What perhaps serves as an effective substitute for a legal contract is the informal social contract between the student and the community during the period of recruitment. A condition for nomination to the Institute is an expressed willingness on the part of the student to return to the community. This pledge is made by the student to the members of the community. Within the context of Asian interpersonal values, an open commitment of this nature has more than the force of law. Fortunately, purely pragmatic calculation has not yet become common among the rural people and there is reason to believe that the social contract forged between the student and his community will prevail over material and personal considerations.

ACADEMIC EXCELLENCE AND RELEVANCE

Another anxiety that has been expressed about the Institute pertains to the issue of academic excellence versus relevance. Some think that, in its efforts to formulate a training programme relevant to the needs of the rural communities, the Institute has seriously compromised the traditional standards of academic excellence. This judgement stems from the observation that the Institute has done away with the usual entrance examination and the familiar grading system. Included in this judgement is the anticipation that the level of knowledge and skills produced by the Institute's M.D. course will not be on a par with those of the traditional medical schools.

As regards the matter of entrance examinations, it should be noted that questions are now being raised concerning the validity of the various tests being given to university applicants. The feeling is that these tests assess skills that may not be entirely relevant to the student's programme. Moreover, as previously stated, the various tests now being given tend to select students from the upper income group. The University of the Philippines, in particular, has looked critically at its own admissions policies and has launched a programme to democratize admissions. The University has admitted students, generally from the lower income group, who would not have met its usual entrance requirements. The result of the University's experiment on democratization is very encouraging; these students are reported to be performing very well in their various programmes.

The standard grading system has also become the target of critical comments from various educators all over the world. What most educators fear is that the standard grading system creates a sub-culture within schools that encourages students to work for high grades at the expense of the meaningful acquisition of knowledge. An attempt to veer away from the standard grading system need not involve the comprising of academic standards but is rather an effort to make the students' academic experience a meaningful one.

Anxiety about the Institute's M.D. course is premature. The M.D. course is not yet operational; indeed, the details of the programme remain to be conceptualized. The Certificate in Community Health programme and the Certificate in Community Health Nursing programme are, however, fully operational. Judging merely from the content of these programmes, it can be seen that they are deeper and broader than the Midwifery Certificate programme and the Nursing programme of traditional schools.

What is at issue in connexion with the demand for academic excellence is the very definition of excellence. Sometimes, wittingly or unwittingly, excellence is equated with earning high grades in courses or with seeking knowledge for knowledge's sake. The concept of the university as being both a teaching and a research institution is connected with the culture of the pursuit of knowledge. To be true to its name, a university or any educational institution for that matter must pursue research, especially what is called pure as distinguished from applied research. There can be no doubt that part of the responsibility of a university is to contribute towards the expansion of the horizon of knowledge. This is precisely one of the functions that a medical college cannot possibly abandon. But this function should not be allowed to overshadow the equally important function of being relevant to the needs of the national community; a balance must be achieved. The Institute was established precisely to achieve this delicate balance between the pursuit of academic excellence, viewed from the narrow standpoint of a university's attempt to contribute to the development of human knowledge, and the demand for relevance. A principle worth considering is the one that equates relevance with excellence. This principle unites the two concepts rather than highlighting the dialectical opposition between them. It is perhaps appropriate to developing societies which, by their very nature, cannot afford the luxury of academic excellence as defined in the West.

SUPPORT

Although the Institute has the status of an academic unit of the University, it remains under the supervision of the College of Medicine. An interdisciplinary committee, made up of experts from the fields of medicine, social work and community development, social sciences, public health, nursing and representatives of the Department of Health, the Department of Local Government and Community Development, WHO and other agencies, provides support and direction to the Institute.

The linkages established by the Institute with the Department of Health, the Department of Local Government and Community Development and the Department of Public Information give practical expression to the principle that the development of health manpower is not the sole responsibility of the University or its College of Medicine but is best pursued through interagency cooperation. Practically all the top personnel of the Department of Health in the Eastern Visayas Region serve the Institute in one capacity or another. In fact, the present Director of the Department of Health of the Eastern Visayas is concurrently the Director of the Institute. An agreement has been drawn up between the University and the Department of Health to promote cooperation between these two institutions. A similar agreement has recently been signed by the Head of the University and the Secretary of the Department of Local Government and Community Development, in which the latter pledges full support to the Institute's programme. WHO not only provides the Institute with technical expertise, particularly in the area of research and development, but also assists in the planning of some of its programmes. The Nelly Kellogg Van Schaick Foundation of Tucson, Arizona, USA, has supported the Institute from the very beginning. A local foundation, the Telengtan Foundation, now also assists the Institute.

With all the support and encouragement being received from the various sectors concerned with the development of the rural areas, there appears to be no reason why the Institute should not achieve its objectives. In the end, perhaps, the success of the Institute in its efforts to develop health manpower for rural communities of the Eastern Visayas Region will not be as significant as its related success in showing that an alternative strategy for manpower development in health and other areas is possible.

CHAPTER 8

FACULTY OF MEDICINE, UNIVERSITY OF EDINBURGH, SCOTLAND:

INTRODUCING A NEW CURRICULUM IN AN ESTABLISHED MEDICAL SCHOOL

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EDITORIAL NOTE

This account is particularly interesting in that it describes the problems encountered in introducing curricular change into an already established medical school, which are very different from those of starting a new medical school with an innovative curriculum. The Edinburgh Medical School is one of the oldest in Europe, and the duration in years and the extent of the consultation, both within and outside the Medical School, necessary between the first suggestions and the eventual introduction of the curriculum are made clear in this account.

The need to break down the barriers between preclinical, paraclinical, and clinical disciplines and help the students to appreciate the relevance of each to the other was met through providing an introduction to clinical problems and methods during the first two years of human sciences. This is followed by a third year of integrated clinical and paraclinical studies leading on to the final two years of clinical studies. Further efforts at integration are made through a systems approach to the preclinical sciences and multidisciplinary teaching methods in clinical teaching.

The use of family practitioners and hospitals outside the university hospital system has provided students with a much broader experience of the practice of medicine and much more practical experience. However, the amount of time spent by the students away from the Medical School means that less reliance can be put on lectures and more has to be placed upon independent learning. Although little progress has been made in the development of learning materials for students' independent learning, a most important aid to both students and teachers has been the clear statement of detailed objectives for the curriculum as a whole and especially for the different sections of the clinical phase.

The author points out that, although many of the original recommendations have not been implemented in full because of constraints of many kinds, the mechanism for change has been institutionalized so that changes can proceed from time to time as opportunity allows.

The introduction of a new curriculum is a difficult matter in an established medical school. Innovations in recent decades have been usually in new medical schools. At the Conference of the Association for Medical Education in Europe, at Uppsala, in 1977,[1] the series of innovations in medical education which were presented and reviewed were all in new medical schools (including Beersheva in Israel, Maastricht in the Netherlands, McMaster in Canada, Hacettepe in Turkey, Tromsö in Norway, and Tampere in Finland).

While all medical teachers will be interested in these new schools, there is a need for corresponding documentation of innovations in established schools.[2] These are brought about and implemented along very different lines from curricula introduced when new medical schools are set up. Unless such accounts are provided, the well-known complaint that innovation is not possible in an established school will continue to be heard.

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[1] STROM, G & WALTON, H., ed. Innovations in medical education. Proceedings of the 1977 Conference at Uppsala of the Association for Medical Education in Europe. *Medical education*, 12 (Supp. Sept. 1978).

[2] The Edinburgh Medical School was one of the line of early schools in Europe providing medical training. The first medical school in Europe, Salerno, was founded in 1096, and then in succession were formed Montpellier, Bologna, Paris, Padua and Leyden. This last school had influential links with Edinburgh, the first organized medical school in Britain. In 1505 the Surgeons and Barbers were formed into a corporation when the Edinburgh Town Council granted a seal of cause, and their craft guild later became the Royal College of Surgeons of Edinburgh. In 1657 the surgeons and apothecaries were united into one body. The Royal College of Physicians was started and obtained a Royal Charter in 1681. Professors of Medicine of the University of Edinburgh were appointed in 1685. The original Faculty of Medicine came into being in 1726. The Faculty proper has recently celebrated its 250th anniversary.

THE MEANS USED FOR CHANGE

The previous curriculum of the Edinburgh Medical School had been introduced in 1964, after an extensive review in 1963 by two planning committees separately responsible for preclinical and for clinical subjects. The two committees did not come together. A B.Sc. Medical Sciences degree was awarded at the end of the preclinical part of the curriculum.

In a discussion paper in 1971, Professor A. S. Duncan, the Executive Dean at the time, listed six good aspects of that curriculum and nine "less successful features" and concluded: "I submit that the Edinburgh curriculum has, in spite of its revision, retained too much of the rigidity which was such a necessary feature of a good medical education in the past".

Acting on the impetus he provided, the Faculty (composed of professors and representatives of other teaching staff) and the Board of Studies (composed of the medical teachers in general) took the decision to investigate the curriculum. For this purpose a curriculum review working party chaired by Dr J. S. Robson was set up. This reviewed 92 documents from teachers and students of the Edinburgh Medical School, and oral evidence given by 62 members of the teaching staff and student body.

The working party issued five reports at intervals during the course of 1973 on: overall objectives for the undergraduate curriculum; the length of the curriculum; the need for a standing curriculum committee; deficiencies and problem areas of the present curriculum; and proposals for content and structure of a new curriculum and examination pattern.

These reports, as they appeared, were discussed by the Faculty of Medicine. After receiving the fifth report, and further deliberation, the Faculty, in October 1974, set up a Curriculum Feasibility Committee under the chairmanship of Professor B. P. Marmion, to "identify parts of the curriculum susceptible in the present constrained circumstances to change in the direction suggested by the curriculum review working party, and to make recommendations for a new curriculum". A financial cutback in Britain had reduced the resources of universities and medical schools. The Curriculum Feasibility Committee report was accepted in May 1975 by the Faculty and the Board of Studies (of which all medical teachers, both in the University and in the National Health Service are members). In accordance with its own and the curriculum review working party's recommendations, the Faculty appointed an Undergraduate Medical Education Committee to "advise the Faculty on all aspects of the undergraduate medical curriculum and related educational matters".

As part of the Curriculum Committee, four phase committees were set up, as described below, each being responsible for parts of the curriculum.

The Curriculum Committee

The first task of the Undergraduate Medical Education Committee and its phase committees was "to advise the Faculty on the implementation of the new curriculum proposed in the report of the Faculty's Curriculum

Feasibility Committee, as modified by Faculty's decisions on the Report". One decision, endorsed by the Board of Studies, was that the feasibility report was not binding, and served as guidelines rather than a blueprint.

From January 1976 the Undergraduate Medical Education Committee and its phase committees considered the details of the proposals. The chairmen and departmental representatives of the phase committees consulted with their departmental staff and with other teachers both in the University and in the National Health Service. Departmental and other discussions followed, ensuring that a wide range of colleagues participated in the preliminary consultations.

A feature of the new curriculum is that it can be reviewed continuously and so is susceptible to modifications when failings become apparent. This is the more necessary because the curriculum to be implemented fell short of some of the original recommendations as a result of compromises that inevitably had to be made and limitations accepted when it came to practice. Disappointment with defects in the proposals can be tempered by the awareness that improvements are possible from year to year.

The establishment of the Curriculum Committee thus provides a means by which the pattern of learning can be modified in the light of teachers' and students' experience. To this end, and in accord with current educational thinking, the proposals for the curricular structure and timetables have to remain under continued review and be subject to both short-term and long-term adjustment.

Approval of other bodies

After these deliberations, a new curriculum, shortened to five years and to start in 1978, was proposed to the Senatus of the University. Prior to that, the representatives of the Faculty held informal discussions with the Education Committee of the General Medical Council, followed by a formal meeting between representatives of the Faculty and of the General Medical Council (including the President of the Council) on 7 December 1976. There were also discussions with neighbouring hospital authorities in the Borders, Fife and Forth Valley, and with the Lothian Health Board, about the provision of clinical facilities in outlying hospitals around Edinburgh. This was essential because the new proposals for clinical teaching called for clinical resources other than the teaching hospitals in the city to be brought into use, and for health service consultants and general practitioners to have a major part in providing the additional clinical teaching, called for by the curricular changes.

THE NEW CURRICULUM

Objectives

Overall objectives were set out for the new curriculum, the Medical School not having specified educational objectives previously. These are stated in the following terms:

The student should acquire and the curriculum afford him the opportunity to develop:

(*a*) the knowledge, skills and attitudes needed in preparation for subsequent professional training in any field of medicine;

(*b*) the ability to elicit and assess information, to make accurate observations, and to select appropriate investigative procedures;

(*c*) the ability to identify health problems, and to analyse them in physiochemical, biological, behavioural and social terms;

(*d*) knowledge of the resources of other health care professions and of the community, and the ability to make appropriate use of those resources in dealing with health problems;

(*e*) acceptance of the roles and responsibilities of the medical profession in prevention, care and rehabilitation;

(*f*) a capacity for change and development in professional practice;

(*g*) a capacity for continuing and lifelong medical education; and

(*h*) a capacity to communicate effectively with colleagues irrespective of the nature of their specialty and with patients irrespective of the nature of their illness.

Structure

The curriculum consists of three phases which follow in sequence.

Phase I. This phase occupies the first and second years and is subdivided into traditional academic terms. The subjects taught are anatomy, physiology, biochemistry and pharmacology, with behavioural sciences and a course in clinical correlation, and in the fifth and sixth terms general pathology and microbiology.

The time allotted to each department's teaching is used in the lecture rooms; in the dissecting rooms, laboratories or autopsy room; in seminars or tutorials; in project work or in private study (structured free time); and in the library or elsewhere.

The clinical contact and correlation component of phase I is planned by a clinical correlation committee. Classes in this subject occupy approximately 50% of the time available on Wednesday mornings throughout the two years of phase I, and introduce the students to patients and clinical situations to allow them to gain insight into the physical, social and psychological aspects of disease. The clinical exercises are also designed to illustrate the value of the preclinical and paraclinical sciences in the management of patients, and whenever possible they relate to concurrent phase I teaching.

At present most of the time is allotted to clinical demonstrations and tutorials but early in their first year students take part in project work in the community or in one of the hospitals. The staff responsible for the course include members of clinical departments and National Health Service teaching staff, members of the staff of the appropriate preclinical departments and the Departments of Psychiatry, Community Medicine, General Practice, Pathology, Bacteriology, Clinical Chemistry and Haematology.

Phase II. Phase II in the third academic year follows the traditional academic terms. The year is planned as a single coordinated course designed to give a general introduction to the clinical subjects that will be studied in greater depth in phase III, and an understanding of the pathological, social and psychological basis of disease.

The principal subjects included in the course are bacteriology and pathology, taught by lectures, practicals, tutorials, demonstrations and autopsies. The clinical teaching, in addition to a coordinated course of lectures, includes clinical attachments in a range of hospital specialities including medicine, psychiatry and surgery. Instruction in other subjects, such as clinical chemistry, haematology, radiology and clinical pharmacology, is also included.

Students have their clinical attachments in medical and surgical wards of the central Edinburgh teaching hospitals. The aim of phase II is to prepare students for embarking on phase III of the curriculum. The objectives of clinical teaching in phase II are similar, but the level of attainment expected by the end of phase II is less advanced than at the end of phase III.

Phase III. This phase occupies the fourth and fifth years of the curriculum, and does not follow traditional academic terms. Students have whole-time clinical attachments to succession of clinical departments, commencing in July following completion of phase II, and lasting two years. A period of 16 weeks is allocated to elective studies. The phase is arranged in six blocks of 16 weeks each, as set out in Table 1.

TABLE 1. CLINICAL ATTACHMENTS IN PHASE III

Block	Duration	Subjects	
1 and 2	32 weeks in	medicine and therapeutics (including dermatology, ophthalmology and otolaryngology)	
3	16 weeks in	surgery (including anaesthetics)	
4	8 weeks in	child life and health	
	8 weeks in	obstetrics and gynaecology (including sexually-transmitted diseases)	
5	8 weeks in	psychiatry	including community medicine
	4 weeks in	general practice	
	4 weeks in	geriatric medicine	
6	16 weeks in	elective studies	

Students have short clinical attachments in dermatology, ophthalmology and otolaryngology. In addition, they gain experience of clinical laboratory medicine (e.g., in pathology, bacteriology, clinical chemistry and haematology, radiodiagnosis, clinical pharmacology and forensic medicine). The continuation of some paraclinical teaching to the end of the curriculum reduces any barrier between laboratory and bedside teaching.

Teaching and learning methods in phase III. The essential feature of the arrangements is that they allow students to participate in small numbers over an adequate length of time as members of clinical teams in all specialties. The arrangements are such that the curriculum can respond to changes in the organization of hospital medicine, and greater use can be made of hospitals and services outside Edinburgh for teaching purposes.

During the clinical attachments in the central Edinburgh hospitals, students also participate in multidisciplinary teaching, attend systematic lectures, and benefit from teaching in both large and small groups. In the latter, paraclinical departments collaborate with clinical departments (including clinical pharmacology), e.g., clinico-pathological conferences and topic discussions. This multidisciplinary teaching constitutes a horizontal component throughout the clinical phase, extending throughout the course the various aspects of the different specialties. The cycle of large-group teaching is completed three times each year, and will not necessarily be repeated in exactly the same way on each occasion. While the multidisciplinary large-group teaching is directed mainly to students attached clinically to medicine, students from all attachments are invited to attend.

Elective period in phase III. During the elective period the student chooses his own field of study, and decides whether to carry it out in the medical school, elsewhere in Britain, or overseas. Of 16 weeks' duration, it may fulfil one of two purposes:

(*a*) a free elective enables the student, if he has maintained satisfactory progress, to pursue his individual interests in a specialty or other area of study at greater depth;

(*b*) a guided elective is appropriate for those students whose performance is such that further instruction and experience are needed in one or more subjects.

An intercalated B.Sc (Medical Sciences) Honours degree

The option of study in depth over one intercalated year in preclinical and paraclinical subjects, leading to a classed B.Sc (Med. Sci) Honours degree, is still available for selected students. The ordinary degree of B.Sc (Medical Sciences), a feature of the mid-point of the previous curriculum, was discontinued. Courses can be taken, in any of the preclinical and paraclinical departments, at the end of phase I or phase II. These courses consist of an entire year devoted to study in depth of the subject selected.

Assessment

Table 2 shows the examinations in each of the three phases. Those in phase I resemble the pattern in the previous curriculum, but with important changes, e.g., the introduction of an examination in behavioural sciences, not previously examined, and of class tests in this subject that contribute considerably to the final mark.

TABLE 2. PROFESSIONAL EXAMINATIONS

Phase I

The first professional examination is taken at the end of the first year and relates to the following courses of instruction (*a*) anatomy; and (*b*) general biochemistry.

The second professional examination is taken at the end of the spring term of the second year, in: (*a*) physiology, including neuroanatomy and special biochemistry; and (*b*) pharmacology.

The third professional examination is taken at the end of the summer term of the second year, in : (*a*) behavioural sciences; (*b*) general bacteriology; and (*c*) general pathology.

Phase II

The fourth professional examination is taken at the end of phase II (at the end of the third year of the curriculum); and relates mainly to the following courses of instruction: (*a*) bacteriology; and (*b*) pathology. The examination has a distinct clinical orientation. (There is no professional examination testing clinical skills at the end of phase II, but students falling short of expected clinical knowledge can be required to undertake remedial study in the subject concerned during the elective period in phase III.)

Phase III

The final professional examination is taken in four parts. The student sits examinations during this phase at the completion of the clinical attachments in: (*a*) medicine and therapeutics (including clinical pharmacology); (*b*) surgery (including anaesthetics); (*c*) child life and health and obstetrics and gynaecology, including sexually-transmitted diseases; and (*d*) psychiatry, general practice, geriatric medicine and community medicine.

These examinations test the objectives of phase III, and include examinations in clinical pathology and clinical pharmacology appropriate to the particular clinical discipline.

Each of the four component parts of the examination is given three times each year.

In phase II the major change is in the inclusion of clinicians among the examiners. Clinical content has also been introduced in the pathology and bacteriology assessments.

The phase III examinations are completely recast. The previous final professional examination no longer exists. Instead, each subject is examined after the student has completed his attachment in the particular field. Students now know about their level of performance directly following the clinical attachment concerned, and opportunity for remedial study (during the elective period or at the end of phase III) is given when evident deficiencies are recognized.

Concentrated attention is being paid to the distinction between the formative and the summative aspects of examinations. Formative examinations aim to inform the student about the extent of the learning he has accomplished, in relation to stated objectives; summative evaluation serves as the basis for decisions about passing to a new course or obtaining a degree. The advantages are emphasized of viewing the examinations as an integral part of the training process; detailed feedback makes the examination educationally relevant for the candidate.

Educational disadvantages to be corrected

The analysis of the previous curriculum, set out by the curriculum review working party (see above) in their fourth report, showed areas in which improvements were needed:

(*a*) there was overcrowding in parts of the curriculum;

(*b*) excessive factual detail was taught;

(*c*) the division between preclinical and clinical parts of the curriculum was marked;

(*d*) the terminal examination system was questionable educationally;

(*e*) deficiencies in the progress of students were not identified sufficiently or early enough for appropriate remedial teaching to be undertaken;

(*f*) the curricular structure did not readily allow for amendment or for change over time.

Major educational and other advantages of the new curriculum

(*a*) The curriculum has been shortened to five years, for all entrants to the Medical School. Previously, some entrants (mainly English school-leavers) gained exemption on grounds of teaching obtained at school and were granted direct entry into the second year of the curriculum. This differentiation has been set aside, all students coming into the first year of the new curriculum.

(*b*) The objectives of the curriculum, not specified previously for the Medical School, emphasize the need for the student to take responsibility for his own education; the objectives make it clear that the knowledge and skills required of students are not necessarily dealt with in formal teaching and show that individually planned study is essential.

(*c*) Objectives are specified for each of the phases (and in considerable detail for each subject in phase III).

(*d*) The goal of the clinical teaching in phase II is to prepare the student for the phase III clinical attachments.

(*e*) The number of lectures is reduced considerably and a limit placed on number to be given each day.

(*f*) Teaching in phase I is arranged to achieve, where possible, coordination of topics and systems by different departments.

(*g*) A uniform behavioural sciences course is introduced for all students.

(*h*) The aim to bring clinical learning into phase I is the ongoing function of the clinical correlation course.

(*i*) Coordinating bodies now ensure continuity of teaching across all three phases, e.g., the pharmacology subcommittee.

(*j*) A wider range of clinical subjects, not all of which previously had clinical attachments, are now given appropriate representation. Geriatrics and general practice may be cited as examples.

(*k*) Much more use is now made of hospitals outside Edinburgh and of clinical teachers who previously did not take an active part but now contribute to the teaching.

(*l*) The elective period in phase III is now extended to 16 weeks, and the experiences selected and the progress of students are under review by an electives subcommittee.

(*m*) Major changes in methods of evaluation and examination have been made; in particular, in phase III the terminal examination has been abolished, and evaluations are now carried out at the end of each clinical attachment. In some preclinical and paraclinical subjects class examinations contribute to the professional examination score.

(*n*) A learning resources subcommittee has been set up, to review and authorize educational equipment required for teaching and to advise about the learning resources centre being planned. A demonstration area adjacent to the reading-room has been equipped and is in use.

DISCUSSION

The transition from the previous to the new curriculum occurred without major difficulties. Some impressions may be commented on.

Phase I

The phase I teaching has perhaps changed least, but the Curriculum Committee, the phase I committee, and the committee for the clinical correlation course are mechanisms which can introduce any further modifications or additions considered necessary.

Clinical correlation course

The aim of the course is to bring clinical learning into phase I and by so doing to make the student more aware of the relevance to patient care of the scientific subjects taught at this time. At present only very limited clinical experience can be offered to phase I students because the clinical teachers have heavy commitments in phases II and III. It is hoped, nevertheless, that clinical experience in the first and second years can be increased, possibly by using selected phase III students as clinical tutors. The elementary principles of physical examination are taught during clinical correlation classes using students as normal subjects.

An important component of this course are the projects which are problem-solving exercises occupying about 30 hours during terms 1 and 2. Thus all medical students at the very start of their first year engage in a project which they select from a list provided. They work as members of a team, each team consisting of about eight students, who plan their project with the help of a tutor. Expert assistance is provided to help them to obtain the necessary background information to carry out statistical analysis of their data, to prepare slides illustrating their findings, and to present this material at the final review sessions. At the end of the period allocated to project work, five sessions are used for presentation of projects, giving students an opportunity to practise the presentation of scientific material and to hear the response to their work from fellow-students and teaching staff. Although students consider this new form of instruction competes with the examinable courses for which they have to study intensively, projects were competently carried out and were, in general, appreciated by the students. In at least one instance the material collected was suitable for publication. The tutors found the work interesting but some of the clinical teachers acting in this capacity had difficulty in finding the necessary time.

Phase II

The phase II teaching allows for the closer coordination of paraclinical teaching (pathology, bacteriology, etc.), with concurrent clinical instruction. Clinical attachments and the study of paraclinical subjects start at the same time and allow planned coordination so that the student gets involved in the laboratory and clinical disciplines simultaneously.

Phase III (clinical attachments)

The phase III teaching, regarded by many as the greatest improvement in the curriculum, allows for students to work in small numbers, no more than one or two, with the consultant and other members of clinical staff, and to become a member of a ward or general practice team.

Use of outside hospitals and other clinical setting

The extension of teaching to hospitals outside the city has succeeded well. Teachers in these hospitals set a high value on their teaching, and undertake the tasks assigned to them with enthusiasm.

Independent learning

The teaching staff have yet to become decided about the role to be given to independent study. Many debates occur and opinion wavers about the place of such learning resources as tape-slide programmes, videotape, etc. However, it seems that a greater move in this direction will be required, because the number of lectures has been cut, and the senior students who have been dispersed to hospitals outside the city require opportunities for learning material not available in peripheral hospitals. While the provision of equipment is not in itself a major problem, the preparation of the content of self-study programmes ("software") by the teachers themselves is a necessity for the success of independent study: this type of instruction will not establish itself unless the members of teaching staff become committed to its success.

Student responsibility

Representation of students on the Curriculum Committee and in all phase committees ensures that students have the means for taking some responsibility for the curriculum being taught to them. In addition, they assist in planning and are able to influence the curriculum in an ongoing way.

Flexibility and awareness

A major change is the educational and administrative mechanism whereby the Curriculum Committee and its phase committees can appraise continually the curriculum throughout its different phases. The mechanism exists for further development, and for immediate adjustment where difficulties or deficiencies are perceived.

CHAPTER 9

MAHIDOL UNIVERSITY, BANGKOK, THAILAND:

TRAINING OF PUBLIC HEALTH NURSE PRACTITIONERS IN THAILAND*

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EDITORIAL NOTE

In Thailand, as in many other countries, the lack of doctors in rural areas means that nurses working in rural clinics have to provide curative care for which they have not been adequately trained, and are often not legally protected. This paper describes the planned response of the Ministry of Health and Mahidol University to this problem. Instead of training a new cadre of health workers, it was decided to give further training to the public health nurses who were already in the field.

A pilot training programme was run and carefully evaluated, and on that basis a full-scale multicentre training programme was developed. Its curriculum, the choice of practical training centres, and the training of teachers for these centres were all based on the results of a pilot study.

This study, focusing on the work of the first group of graduates and a second group of students in training, identified a number of problems. These and some of the attempted solutions are described. The importance of good Ministry-university cooperation for the success of many aspects of the programme is stressed.

Thailand, like many other developing countries, has been faced with the problem of inadequate health coverage of a large number of people, mostly living in the rural areas, who have little or no access to essential health services. The obvious factors contributing to this chronic problem are inadequate health facilities and health manpower, and the inequities in distribution of health resources between the urban and rural communities. These problems are accompanied by a widening social and communication gap between health personnel and clients, which results in under-utilization of government health services by the rural population.

The Government of Thailand has tried several approaches in order to make health services available to everyone in the community. The focus of the National Health Plan is to improve the health of the entire population. This paper illustrates an approach used by the Government in an attempt to strengthen country health services through the training and the more economical use of nursing manpower.

As an example of how a country attempted to try an approach to meet the health needs of its people, it is hoped that this case study will be useful to other countries striving for solutions to similar problems.

PILOT PROJECT

Faculty of Public Health

The Faculty of Public Health was established, in 1948, as part of Mahidol University (formerly the University of Medical Sciences). Its main function is to prepare health personnel for various health agencies in the country. At first, the Faculty offered three courses: the Master of Public Health for medical doctors (from 1948); the Diploma in Sanitation (from 1949); and the Diploma in Public Health Nursing (from 1953).

The Faculty of Public Health is the only institution in the country providing training in various public health disciplines. It consists of 13 departments, including a training and research centre at Soong Nern District, Korat Province. The Faculty offers 17 courses at the graduate and undergraduate level, including one international course at the master degree level (in English). The Faculty carries out research in public health and related fields and provides consultations and service to other agencies and the community, usually as part of training and research activities.

In 1978, the Faculty had 150 teaching staff for a student body of 548, with a Government budget of about US $1 million.

Department of Public Health Nursing

The Department of Public Health Nursing, one of the departments of the Faculty of Public Health, was originally established as the School of Public Health Nursing in 1953. It was a joint effort of the Government of Thailand and the World Health Organization to prepare qualified public health nurses to work in the rural areas. The first programme offered was a two-year postbasic nursing course leading to a Diploma in Public Health Nursing.

The major function of the Department is to prepare different levels of public health nurses. The current teaching programmes are as follows:

The Diploma in Public Health Nursing is a one-year course; admission requirements are graduation from an approved school of nursing with midwifery certificate and at least one year of working experience in the health field.

The Diploma in Public Health Nurse Practitioner and the Certificate in Nurse Practitioner are described below.

The Bachelor of Science in Public Health Nursing programme is a one-year continuation of the Diploma in Public Health Nursing and is aimed at preparing the public health nurse for a supervisory position.

The Master of Science in Public Health, specializing in public health nursing, aims at preparing the graduates for administrative positions in the public health nursing service and education. Three special topics are offered: public health nursing administration; maternal and child health nursing; and public health nursing education. This course requires two academic years of full-time study plus a thesis.

Background

Various topics concerning the extended roles of nurses were discussed at the Fourth National Nurses Convention held in Bangkok in 1972. These included the fact that nurses had been utilized in curative care activities for which they were not trained. For example, a sample survey of nurses all over the country found that more than half of the nurses (54.8%) performed episiotomy; 73.2% gave intravenous injections; and 53% performed suturing.[1] The reasons underlying these performances reflected the problem of physician shortage in certain parts of the country. The Convention created more controversy on the topic. Some nurses agreed with the idea of role extension and some did not. There was, however, a call for proper training and legal protection for nurses who have to provide curative care as part of their duties.

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[1] THAI NURSES ASSOCIATION, *Report on the Fourth National Nurses Convention*, Bangkok, October 30–November 3, 1972, p. 111.

In the same year, the Faculty of Nursing of Mahidol University submitted to the University Board a programme proposal for the training of nurse practitioners. In response, the Board appointed a committee consisting of five members from the medical and nursing professions to study the situation. The Committee recommended that the programme leading to the Diploma in Public Health Nursing at the Faculty of Public Health should be revised to incorporate certain knowledge and skills in basic medical care.

Curriculum revision

With the help of an Advisory Committee consisting of physician and nurse leaders from Mahidol University and the Ministry of Public Health, the curriculum leading to the Diploma in Public Health Nursing was revised. Formerly, the programme had emphasized disease prevention, health maintenance, and health promotion. Courses covered public health science, social sciences related to public health, and public health nursing. Full-time study for two semesters was required to complete a minimum of 38 credits including field work. The six-week field training was arranged at the end of the programme to provide the student with experience in community survey, identification of health needs, planning of public health programmes, and implementing these programmes through public health nursing roles.

In the revised curriculum, courses in public health and public health nursing are offered in the first semester. Courses in basic medical care and physical assessment, both theory and practice, compose the second semester. This term is divided between medicine, surgery, paediatrics, obstetrics; and gynaecology, including diagnosis and treatment. In addition, the students are given an opportunity to practise their medical care skills and other public health nursing skills during the six-week field training period.

Training

It was agreed that the revised programme would first be implemented on a trial basis. Thus, in 1973, a group of 12 students was recruited from those who had enrolled for the Diploma in Public Health Nursing programme. The selection was based on the criteria that the students had to be employees of the Ministry of Public Health, working in rural health centres (preferably with no doctor on the staff) and, upon completion of the course, be willing to return to the same posts. In addition, they had to be willing to take part in the pilot project.

In the first semester, this group of students took courses at the Faculty of Public Health. In the second semester they were sent to Siriraj Hospital, where the Faculty of Medicine of Mahidol University was responsible for theory and clinical teaching in basic medical care. Field training in a rural area was arranged for them by the Faculty of Public Health.

This pilot project was continued for four consecutive years (1973–1977). In the last year of the pilot project, other selected hospitals in Bangkok were involved in the teaching of both the theoretical and clinical aspects of the medical care courses. A total of 99 students graduated from the pilot programme.

Evaluation

The first group of pilot project students were followed up by two site visits. After returning to their original health centres, eight of the 12 students were interviewed, on the second site visit, about their job satisfaction. Their coworkers were then interviewed about their opinions on how well these nurse practitioners performed their functions and how well they were accepted by the clients.[2] The interviews brought out the following points of view:

Regarding the medical care functions, two of the nurses were very satisfied, three were satisfied and three were not satisfied. Those who felt satisfied said that they enjoyed their work and, after being trained, had self-confidence in providing medical care. Those who were not satisfied gave as their reason that they did not have enough opportunity to give medical care to the limited number of patients who came to the health centre, as these patients were handled by the physician.

Concerning disease prevention and health promotion functions, one nurse was very satisfied, three were satisfied, three were not satisfied and one felt neutral. Those who felt satisfied with their preventive functions said that they enjoyed public health nursing work. The ones who were not satisfied said they had no time for preventive work owing to the heavy clinic workload. The other reason was they could not get cooperation from the community.

The 16 coworkers interviewed included two physicians, seven nurse supervisors, four midwives and three health workers. In response to questions concerning the nurses' skills in medical care, seven said that they were good, eight rated them as average and one rated them below average. Their opinions on the acceptance of the nurse practitioners by clients were as follows: six good, eight average, one below average and one poor.

Other opinions expressed by the coworkers were: that more people came for service as a result of the nurse practitioner work; that every public health nurse working in a rural area should take the nurse practitioner course; that nurses who completed the course developed more initiative and more self-confidence; that nurse practitioners should be able to prescribe medicine; and that the nurse practitioners should be licensed, to be able to function better.

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[2] PAICHIT KASIWAT, *A report on the nurse practitioner site visits*. Department of Pubic Health Nursing, Faculty of Public Health, Bangkok, 1975 (mimeographed document).

The staff member of the Department of Public Health Nursing who participated in the evaluation site visits also gave her impressions. She said that a few nurses who failed to function fully as nurse practitioners did so as a result of misplacement at the health centres, e.g., improper location and inaccessibility to the people. Another reason was the inappropriate utilization of these nurses for non-nursing duties, such as clerical work. Furthermore, for nurse practitioners working in health centres without a physician, mention was made of the need for consultation and supervision by a physician or nurse supervisor trained in the clinical area. This missing factor was also recognized by coworkers and the nurse practitioners themselves.

The second group of 20 students was also evaluated during the field training period.[3] The field training took place in Pak-Thong-Chai District in Nakorn Rajsima Province in the academic year 1974–1975. The evaluation objectives were: to assess the students' clinical skills; to identify types and number of cases handled by the students; and to assess the clients' attitude towards services given by the nurse practitioner students.

Evaluation of the clinical skills was done by a physician on the team using an evaluation form. Some of the results were as follows:

Skill in history taking and recording: 4 students were rated as very good, 11 students were rated as good, 5 students were fair.

Skill in general physical assessment: 1 student was rated very good, 10 students were good, 9 students were fair.

Skill in using selected physical assessment techniques and instruments: 2 students were rated as very good, 6 students as good, 7 students as fair and 5 students as poor.

Skill in making diagnosis: 1 student was rated as very good, 9 students as good and 10 students as fair.

Skill in decision-making for management of health problems including referral: 4 students were rated as very good, 9 students were rated good, 7 students were fair.

Skill in medical treatment: 3 students were rated very good, 7 students were good and 10 students were fair.

It may be concluded that, in general, the students' medical care skills were satisfactory, except for their skills in physical assessment and making diagnosis. Physical assessment using manual dexterity and instruments was the poorest. It was apparent from these findings that some changes in the training programme were needed.

During the six-week field training at Pak-Thong-Chai District, 4295 cases were seen by 20 nurse practitioner students, approximately 215 cases per student. The greatest number of cases were upper respiratory infections. Gastrointestinal infections were next in number. The other cases were neurological and skin diseases. All of these cases presented mild symptoms and were handled adequately by the students. There were only 70 complicated cases needing further investigation or referral. They were: suspicion of heart disease, pneumonia, and liver abscess, and emergency cases such as appendicitis, gunshot wounds, abnormal labour, and abortion. These cases were referred to the provincial hospitals.

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[3] PAICHIT KASIWAT, *A report of the public health nurse practitioner students' field practice in medical care, academic year 1974–1975*, Department of Public Health Nursing, Faculty of Public Health, Bangkok (mimeographed document).

In order to investigate the attitude of the clients, a sample of 418 patients were interviewed by students of other health disciplines. All of the patients except one showed a favourable attitude toward the nurse practitioners' services. Many of them wanted a nurse practitioner to be stationed permanently in the village.

CURRENT TRAINING OF PUBLIC HEALTH NURSE PRACTITIONERS

Fourth Five-year National Health Plan

The Fourth Five-year National Health Plan was prepared in 1975 to be implemented during 1977–1981. The planning committee consisted of members from various health and health-related agencies with the Health Planning Division of the Ministry of Public Health acting as coordinating body. The United Nations and WHO also were closely involved in the planning.

The Plan covered country health programming and project formulation, and reflected the Government's policy towards the improvement of health services for the rural population. For example, the goals included:

> To provide better medical care for the population by improving the efficiency and effectiveness of medical care services rendered by hospitals and health centres . . .
>
> To utilize effectively the health infrastructure in its provision of integrated health services and to build up health units together with the training and development of health manpower in order to provide increased coverage of the rural population with better health services.[4]

In order to accomplish these goals, several approaches were outlined. One was the training of 1400 nurse practitioners to help provide medical care at district health centres and at the outpatient departments of the provincial hospitals. As a result of the success of the pilot nurse practitioner project, agreement was reached between the Ministry of Public Health and the Faculty of Public Health to train this number of nurse practitioners. It was also agreed to base the training on the programme previously designed and used in the pilot project, with some modification.

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[4] Unpublished WHO document, 1977.

Committees

A Joint Committee consisting of representatives from the Ministry of Public Health and the Faculty of Public Health was formed together with seven subcommittees as follows:

The Subcommittee on Curriculum was responsible for the development of guidelines for curriculum planning, for setting up curriculum objectives and for producing guidelines for the organization of teaching and learning experiences.

The Subcommittee on Selection of Students was responsible for setting up the criteria for selection and coordinating of activities concerning students' selection.

The Subcommittee on Selection of Training Sites was responsible for the selection of provinces, including the provincial and district hospitals within the provinces, to be used for students' practical training sites.

The Subcommittee on Exchanging and Training of Trainers was responsible for the selection of teachers and trainers, both in Bangkok and in the selected provinces, including the organization of meetings and workshops for these trainers.

The Subcommittee on Resources Procurement was responsible for determining budget and other resources needed for the programme, identifying sources of funds and delegating to appropriate departments in the Ministry of Public Health and the Faculty of Public Health the tasks of requesting and administering the budget.

The Subcommittee on Coordination of Training was responsible for working out with other organizations matters regarding the nurse practitioner programme, e.g., aspects of legal protection.

The Subcommittee on Evaluation was responsible for evaluation of the training programme and the utilization of the nurse practitioners.

Curriculum leading to the Diploma in Public Health Nurse Practitioner

The curriculum leading to the Diploma in Public Health Nurse Practitioner aims to support the Government policy of providing public health and medical care services for all people through the preparation of nursing personnel with integrated knowledge and skills in basic medical care, prevention of disease and health promotion, as well as public health nursing. The duration of the programme is one academic year. The admission requirements are as follows: The applicant must be a graduate from approved nursing school with a diploma or certificate in nursing and midwifery; must have at least one year of work experience in the field of nursing or public health; must be in good health physically and mentally; must have good morals and behaviour; and must pass the entrance examination.

The curriculum objectives are as follows: Upon completion of the programme, the student will be able to function in the following areas:

(*a*) *Basic medical care*

- do complete history taking, recording, and physical examination of children and adults;
- make differential diagnoses using simple diagnostic techniques;
- treat minor illnesses and common diseases;
- identify acute and complicated illnesses and appropriately refer for further diagnosis and treatment;
- give emergency care as indicated and promptly refer the patient to hospital.

(*b*) *Public health nursing*

- identify health problems and health needs of individual, family, groups, and community;
- provide public health nursing services to individuals of different age groups and health status to ensure continuity of care including rehabilitation;
- teach and advise the public concerning the prevention of diseases and health promotion;
- give professional consultation to other health personnel and agencies.

(*c*) *Administration*

- plan and evaluate public health nursing programmes and services;
- organize public health nursing services, assign and supervise the work of other nursing personnel;
- coordinate with other personnel and agencies in giving health care to individual, family, and community;
- participate in the training of nursing and other health personnel;
- collect statistical data and maintain health information system for the use of community health development;
- report service outcomes to the responsible agencies and the public.

The programme is organized in three parts: courses in general public health and public health nursing; courses in basic medical care; and field training.

Courses in general public health and public health nursing are taught in the first semester. They include:

— Public health administration	2 credits	32 hours
— Biostatistics	2 credits	48 hours
— Principles of epidemiology and communicable diseases control	2 credits	32 hours
— Infectious disease I	2 credits	32 hours
— Infectious disease II	2 credits	32 hours
— Maternal and child health and family planning	2 credits	48 hours
— Health education	2 credits	32 hours
— Public health nutrition	2 credits	32 hours
— Environmental health	2 credits	32 hours
— Public health behavioural science	2 credits	32 hours

— Public health nursing	3 credits	64 hours
— Principles of supervision	2 credits	32 hours

Courses in basic medical care starting in the second semester include:

— Health assessment	2 credits	48 hours
— Medical care I: medicine	2 credits	48 hours
— Medical care II: surgery	2 credits	48 hours
— Medical care III: obstetrics, gynaecology and family planning	2 credits	48 hours
— Medical care IV: paediatrics	2 credits	48 hours
— Medical care practice	4 credits	280 hours

Except for medical care practice, courses in basic medical care take place in Bangkok over a period of 10 weeks. The first two weeks are concentrated on health assessment, and utilizing lecture, demonstration and classroom practice methods. Other courses cover eight weeks of lectures and clinical teaching. Four hospitals in Bangkok are used for clinical teaching, each hospital is responsible for one area of medical care, e.g., medicine, surgery, etc. Each group of students spends two weeks at each hospital, on a rotation schedule.

Medical care practice, lasting eight weeks, takes place at the provincial hospitals in 14 provinces. A group of eight or nine students is sent to each provincial hospital to gain clinical experience in medicine, surgery, obstetrics and gynaecology, and paediatrics. The experiences are in outpatient clinics, emergency care and the inpatient wards. In each specialty, the students work closely with their medical preceptors for training, while the head nurse of the department acts as the training coordinator.

Field training gains 3 credits and lasts for 210 hours (six weeks). It provides the students with the opportunity of applying their knowledge and skills in public health and medical care to real life. One or two students are placed at each district hospital to work in the outpatient clinics. At the same time, the student will be assigned to an area or a village where she can have experience of doing a community survey to identify health problems, planning of public health nursing services, and working with others on the health team to meet the community needs. During this period, the students schedule their work to include both clinical and community field activities.

Curriculum leading to Certificate in Nurse Practitioner

This programme, which started in 1978, aims at supplementing knowledge and skills in basic medical care for nurses employed by the Ministry of Public Health who were graduates of the Diploma or the Bachelor degree programmes in public health nursing prior to the implementation of the Diploma in Public Health Nurse Practitioner programme. The duration of the programme is six months. Students are selected by the Ministry of Public Health using the same criteria as for the Diploma programme except that there is no entrance examination.

The organization of the courses is similar to that of the medical care part of the Diploma programme. There are, however, some differences. First, students are required to take a course on problems in nursing and public health practices to acquaint them with current problems and trends in nursing and public health. Secondly, they are not required to do an extensive community survey, since they have had this experience during field training for the Diploma in Public Health Nursing.

Administration

It was anticipated that 140 students would be included in the first year of the programme (1977) and that there would be 300 in each subsequent year. The selection of students was carried out in two steps. The first step was nomination by the Ministry of Public Health as the basis of criteria set up by the Subcommittee on Selection of Students. This gave high priority to nurses working in a health centre without a physician. The next priority was given to nurses from district or provincial hospitals with an inadequate number of physicians. Nurses working in health centres located in the remote areas also had high priority in selection. Secondly, selection by the Faculty of the Public Health was through a written entrance examination and interview.

Orientation of the trainers

Due to the involvement of so many people in the training process, problems of communication, accepting direction and obtaining cooperation were expected, especially from the physicians and nurses in the provinces selected as training sites. To minimize the problems, the Subcommittee on Exchanging and Training of Trainers visited each province twice before students were sent out for their clinicial practice. The first visit was for a meeting with the provincial health officers, medical directors, medical and nursing staff of the provincial and district hospitals. The purposes of this visit were to acquaint the provincial health and medical personnel with concepts, policies and objectives of the nurse practitioner training programme. At the same time, the suitability of the province in terms of physical facilities and willingness to participate in the training were determined.

Medical staff in these provinces exhibited both favourable and unfavourable attitudes towards the programme. Such attitudes were reflected in such questions and suggestions as:

> "Do patients treated by the nurse practitioner have more complications than those treated by a physician?"
> "Can nurse practitioner practise privately? Does the law permit them to do so?"
> "Will utilization of nurses in medical care create more problems in the nursing manpower shortage?"

"What will happen to the nurse practitioners when we have an adequate number of physicians?"
"What kind of incentive will the nurse practitioners have for their expanding responsibilities?"
"The nurse practitioners' practice may not be accepted by the patient."
"The nurse practitioners' practice should be protected by law."

The visiting team attempted to answer these questions.

The aim of the second visit was to orient the medical and nursing staff to the training process, course content and objectives of practical training in the provinces, since these people were to be the actual preceptors and coordinators.

Budget

There was no special budget for the first year of the programme. It was agreed that costs relating to the theoretical and clinical training in Bangkok would be met by the Faculty of Public Health. The Ministry of Public Health took responsibility for all expenses incurred in clinical training in the provinces. Field training was the joint responsibility of the two organizations. The budget for subsequent years has been requested.

In addition, assistance in various forms has been received from international agencies such as WHO, UNICEF and the China Medical Board. The World Health Organization provided a nursing consultant, fellowships to the staff of the Department of Public Health Nursing, as well as textbooks and audiovisual equipment and materials. UNICEF assisted with medical supplies and equipment, and funds for the preparation of manuals. The China Medical Board funded the evaluation of the pilot project. Future funding may be available from the International Development Research Center of Canada and the United States Agency for International Development (USAID) for various aspects of the programme.

Evaluation

The following assessments were carried out for the first year of the programme: evaluation of students' knowledge through written examination at the end of each course; evaluation of the organization of learning experiences in each course, by students, using an evaluation form; evaluation of students' skills during their practical and field training in the provinces, by the medical preceptors; and evaluation of the management of teaching and learning experiences in the provinces, by the students and an evaluation team, through questionnaires and interviews.

Long-term evaluation has been planned to assess the effectiveness of the programme and the utilization of the nurse practitioners after their graduation.

Reorganization

In 1978, some changes were made, mainly as a result of the previous formal and informal evaluation of the programme. The following are the major changes (see Table 1).

The University has reduced the length of one semester from 18 to 16 weeks. Thus, the period for general public health and public health nursing in the first semester is two weeks shorter than in previous years.

Medical care theory, which is taught in Bangkok, has been extended from seven weeks to 10 weeks. The organization of learning experience has changed to classroom teaching along with hospital bedside teaching. In 1977, classroom teaching alone was used throughout the seven-week period.

Clinical practice at provincial hospitals has been extended to eight weeks and practice at the district hospitals is included in the six-week field training period.

The total duration of the medical care part is now 24 weeks (including field training) instead of 21 weeks.

TABLE 1. EVOLUTION OF PROGRAMME STRUCTURE 1973–1978

Period	Subject		Length	Place
1973–1976 Pilot programme	General public health and public health nursing	Theory	18 weeks	Faculty of Public Health
	Medical care	Theory Clinical practice	15 weeks	Faculty of Medicine, Siriraj Hospital and health centres
	Public health nursing and medical care	Integrated field practice	6 weeks	Community
1977	General public health and public health nursing	Theory	18 weeks	Faculty of Public Health
	Medical care	Theory	7 weeks	Faculty of Public Health
		Practice	8 weeks	Provincial and district hospitals
	Public health nursing and medical care	Integrated field practice	6 weeks	Health centres and community
1978 (Present programme)	General public health and public health nursing	Theory	16 weeks	Faculty of Public Health
	Medical care	Theory	10 weeks	Faculty of Public Health and hospital in Bangkok
		Clinical practice	8 weeks	Provincial hospital
	Public health nursing and medical care	Integrated field practice	6 weeks	District hospital and community

DISCUSSION

The training of public health nurse practitioners as a national project needed a considerable time for planning. In the case of Thailand, the pressures of political and health needs did not allow adequate preparation.

Thus, several problems have been encountered in the curriculum itself, in the training process, and in administration. Some of these problems have been taken care of and some have remained unsolved. The following problems are worth noting.

Problems in the curriculum and training process

The attempt to balance knowledge and skills in general public health nursing with those in medical care has resulted in a heavy classroom work load both in the first and second semesters of the programme. This problem has been addressed through: elimination of less important and elective courses (this step brought the first semester credit hours to 26, which is still too many; and the extension of the medical care part in the second semester to 18 weeks, with modification of training methods (see above).

The question of lack of consistency of practical training in different provinces is a serious one. Efforts to minimize this difficulty included: regular visits and evaluation by the medical and nursing staff of the Faculty of Public Health during the period of practical training; and a two-day workshop, organized in June 1978, to orient trainers from Bangkok and other provinces towards the policies and objectives of the programme, the teaching content and the training processes. In addition, the preparation of training manuals to be used by the trainers and students has been planned.

Administrative problems

While working through the Joint Committee and its subcommittees for matters related to training policies has helped communication with the Ministry of Public Health, it has involved some difficulties. Since the committees' chairmen and some of their members are in higher administrative positions in the Ministry of Public Health and the Faculty of Public Health, they are usually too busy with other responsibilities to give their full attention to committee work. Consequently, the committees could not meet as regularly or as frequently as needed. This sometimes caused the work to be delayed. No better solution has been found, however, since the authority of the committees' chairmen is needed to approve many aspects of training. Despite these difficulties, the Joint Committee and its subcommittees have tried their best to make the programme a success.

Problems with the recruitment of nurses to enter the programme have resulted in a smaller annual enrolment than envisaged. According to the Fourth National Health Plan, 1400 nurse practitioners are required by the year 1981. Since 1973, only 226 nurses have graduated from the programme. In order to increase the enrolment, the selection criteria have been revised to include nurses working in the medical and nursing care sections of the provincial offices. The problem of the lack of incentive pay and *per diem* has not yet been overcome and may deter recruitment.

Problems of legal protection and medical supervision have arisen. At present, the public health nurse practitioner is not allowed to work in private practice. She performs her curative function under the supervision of the physician. In the case of a nurse working in a health centre without a physician, either the provincial health officer or the physician at the nearest district hospital is responsible for her curative functions. So far, there is no adequately organized system of supervision for the nurse practitioners. Much is, therefore, left to be done in the area of legal protection for the nurse practitioners. An organized system of medical consultation and supervision is needed, especially for nurses working at centres with no physicians. A new nursing practice law is also required.

CONCLUSIONS

The training of public health nurse practitioners was an approach to meet the medical and health needs of the rural population. It was expected that nurses trained by the programme would be better able to work in the areas of preventive and curative care as well as perform health maintenance functions. The programme is relevant to Thailand's situation, since most of the nurses who have followed the programme have worked in rural areas. They have brought with them not only background knowledge and skill in nursing, but also the work experience that enhances their learning. This is a crucial factor in being able to confine the programme to a period of one year. In addition, the relevance of the programme to rural health is maintained by performing village community health surveys and providing preventive and curative care for the people studied. During field training, some students live in the villages with the health team and some live at the district hospitals and work closely with local health personnel at the district and village levels. Considering the level of competence needed for the job, the training of public health nurse practitioners is much more economical than training a new comparable type of personnel, such as a medex.

The successful execution of the programme can be attributed to the ability of the Ministry of Public Health to work with the training institution, the Faculty of Public Health, through the Joint Committee. This permitted the easy exchange of views between user and producer as well as the organization of the many supporting operations involved. The cooperation of the many provincial and district hospitals was facilitated through the subcommittees. The authority to plan and implement a complicated training programme and its evaluation was greatly assisted by this unique working relationship. However, the question of how well the programme has achieved its goal of meeting the health needs of the country remains to be answered. It is hoped that an extensive study of the programme's effectiveness and the utilization of its graduates will provide the answer; the programme can then be adjusted accordingly.

The approach described in this paper may be found useful to other countries having similar health problems and a similar health care system.

It is, however, advisable to start on a small scale. If a large-scale project is needed, adequate time for preparation should precede the actual training. This preparation phase should include planning for physical facilities, administration, and training of physicians and nurses who will participate as trainers and preceptors.

CHAPTER 10

THE NATIONAL SCHOOL OF MIDWIFERY, LOME, TOGO

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EDITORIAL NOTE

Only about half of the trained midwives in Togo are found working in the health centres and maternity clinics scattered through the country's rural areas, and their numbers are insufficient. Moreover, midwives trained in developed countries are found to be unprepared to face the tasks and problems of independent work in rural areas. The National School of Midwifery has therefore endeavoured since 1964 to provide a training programme determined by the role that the midwife is expected to play in the community. Of particular interest is the unceasing effort to define priority needs and progressively adapt the curriculum accordingly.

To make the training relevant to the situation in Togo, the curriculum, based on the French system, has been enlarged to include tropical diseases and their epidemiology, nutrition, health education, family health, and public health administration. Considerable attention is given to preparing students to work independently under rural conditions. The programme includes a one-month stay at the Centre for Social Work Training at Lomé, and another month working with a trained midwife at a rural health centre.

The adaptation of a French midwifery curriculum to meet needs in Togo has had to take account of biological, sociological and cultural factors. Obstetrical and child health problems in West Africa are very different from those in France. Once in the field, midwives are expected to cope with gynaecological problems and undertake child health activities, and the training programme has been strengthened accordingly.

Considerable allowance has had to be made for the particular attitude of the Togolese people towards illness, deriving from ancient beliefs and customs. Pregnancy and deliveries are especially subject to traditional practices, of which the author gives an account. "The results are sometimes fatal", she says while recognizing the unquestionable benefits of some of the plants and infusions used. In any case, if the midwives are to encourage good practices and discourage bad ones, they must be familiar with both. Above all they must not, through ignorance, cause unnecessary offence or fear. Sociology has therefore been taught in the School since its inception, and additional teaching on psychology has been added since 1970.

Shaped like a long corridor, and situated in the tropical zone of West Africa, Togo is bounded on the south by the Bight of Benin (Atlantic Ocean), on the north by Upper Volta, on the east by Benin, and on the west by Ghana. It is 540 km from north to south and has an area of 56 000 km^2.

The population in 1970 was 1.9 million, but by 1978 it had risen to almost 2.4 million, representing an annual growth rate of over 2.8 %. About 20 % of the population now lives in towns of 5000 people or more, and Lomé, the capital has about a seventh of the country's total population. The population of Togo is very young, 55 % being below the age of 15 years.

The health situation

Infectious diseases are the main problems among the people of Togo. Malaria, respiratory infections and enteritis made up over 60 % of the complaints recorded at medical institutions in 1977, while enteritis was the single most important cause of death. Measles, tuberculosis, tetanus, and protozoal and helminthic infections are also common. All these combined with widespread malnutrition among children lead to high infant and child mortality rates. Maternal and perinatal mortality rates are not known, but are thought to be high, especially in the rural areas.

Although Government health care facilities are expanding and becoming more accessible to the population, animism, fetishism, and ancestor and spirit cults maintain a particular attitude towards illness among the Togolese people. Even in hospitals, both traditional and modern medicine are often seen working side by side for the wellbeing of the patient. Magicoreligious beliefs link the supernatural and the natural closely together; illness may therefore be the result of a spell cast by an enemy, a punishment for personal misdemeanours or for an unexpiated offence committed by a parent, or an act of vengeance on the part of an ancestral spirit who has been ignored or insufficiently revered. In the case of illness, the fetishist and the witch-doctor are visited at their homes or in religious communities, and they consult the *fa*, the oracles, in order to discover the cause of the illness. Sacrifices are made and the gods and ancestors are asked to intercede and appease the spirits so as to ensure a return to good health. Even when someone dies suddenly from an unknown cause, the oracles are consulted and sacrifices are made to safeguard the living. In addition, infusions, potions and powders are prepared from a variety of plants and given as additional parts of the "treatment". Traditional medicine is also preventive. It wards off illness and "bad death", and protects against ill fortune by means of sacrifices, scarifications, the wearing of amulets and rings, and individual and group rituals.

TRADITIONAL OBSTETRICS

Traditional obstetrics remains the special field of the women who preserve the traditional practices. Traditional birth attendants are usually older women with great experience in the art of delivery; they are often multiparous themselves, and have learned from their mothers and neighbours. Because of their various and undeniably useful activities, they play an important part in the lives of their families and village communities. But while they are very helpful in attending normal confinements, disaster frequently results from complicated cases. In fact, in such situations they do not act directly on the women concerned but perform ritual ceremonies intended to appease the spirits of ancestors and even of living people with whom the woman in labour is not on good terms, or whom she may have offended during her pregnancy.

Pregnancy. Traditionally, a childless couple is considered unlucky; pregnancy is therefore a sign of blessedness and is watched over with special care. It is a source of happiness for the couple concerned, and for their neighbours, relatives and, above all, in-laws. If the woman is newly married and it is her first pregnancy, it is also a special tribute to her parents, who are to be congratulated on bringing up their daughter so well. The couple themselves are quite proud, particularly if they are young. Pregnancy is the proof that they were both well-behaved adolescents and that they are normal.

Both the mother and the mother-in-law of the pregnant woman have a role to play in ensuring a normal pregnancy and confinement. There are slight variations in the rituals performed and taboos observed for this purpose, according to the region and ethnic group.

The following example is typical of the Atakpame Region.

Prenatal supervision. As soon as the pregnancy has been confirmed, the woman's parents perform a ceremony to ward off bad luck and protect the mother and fetus from the ill-will of sorcerers and envious individuals. To avert a possible miscarriage, the pregnant woman must wear a protective ring on her finger and a fine cord with an amulet on it around her hips; neither of these must be removed or miscarriage will result. She will only take them off when the contractions begin in order to facilitate delivery. They also protect her from the "illness" (mastitis) which affects a mother's milk after birth and consequently her child.

Taboos. The future mother is not allowed: to drink directly from a bottle as this would complicate delivery; to eat in the marketplace unless she is selling there, in which case she must take certain precautions to ward off the evil spirits which haunt the market and might eat with her and cause her harm during labour or possess the child at birth; to eat dough made the previous day, or she will defecate while giving birth; to buy tomatoes at the market or eat them, or the child will be born with phlyctenular spots on its body; to eat sugar (sweets) or the baby will be too fat; or to have her hair plaited at the market as this would cause coiling of the umbilical cord.

The future mother must keep her navel hidden from the evil eye. She must treat everybody with the respect due to them, particularly her mother-in-law and above all her aunt (her father's sister) and sister-in-law, traditionally two extremely powerful people. She must not make fun of cripples or her child will be born abnormal.

Although the expectant mother is excused from heavy work during the first three months of her pregnancy, during the last three months she is expected to work so as to facilitate the separation of mother and baby at birth (the popular belief is that the baby is stuck to the mother's abdomen and must disengage itself at birth). Sexual intercourse is permitted to open the way for delivery. A pregnant woman follows a normal diet.

Confinement. A woman in labour is halfway between life and death: she is said to "hold death". This is why any fault or misbehaviour is forgiven in a woman who has given birth normally. A normal delivery is proof of the gods' blessing on the mother: she must be a just woman, chaste, innocent and charitable.

In popular belief, the draining of the amniotic fluid, manifested as loss of water when the bag of waters is ruptured, can occur either through the vagina, which presages an easy birth, or through the mouth, which is the sign of a long and difficult confinement. When this happens, precautions are taken to avoid later loss of teeth: the woman must immediately rinse out her mouth with salt water and bite the traditional spatula (a piece of bamboo used to prepare maize dough).

The ways in which prolonged labour can be interpreted are interesting:

- either the woman has committed a serious misdemeanour which she must confess (adultery or failure to observe the taboos related to the *fa*, the clan or her pregnancy) in which case her labour will finish normally after absolution;
- or there is somebody present who is a wrong-doer or who has the evil eye and who must be unmasked and made to leave;
- or the child does not want to enter the world except in the presence of its father; in this case, the father must be brought or, if he is not in the area, represented by his sister or by an object which has belonged to him;
- or else the dowry paid was insufficient and must be duly supplemented.

In some cases only a sacrifice to the sorcerers or fetishes (an offering of chicken, or mutton) will save the woman in labour from death.

For delivery of the child, the woman, her knees apart, is seated on a loincloth pad which in turn is placed on her heels, which are together. Behind her sits an old woman or her mother. The pregnant woman is gripped between the helper's thighs and held closely under the breasts, the helper passing her arms under the pregnant woman's armpits. With each push the helper assists the woman in labour by pressing on her belly.

An expulsion that takes unduly long is thought to have the same causes as prolonged labour, and the same therapeutic ceremonies are carried out. If they do not work, the traditional birth attendant intervenes, administering drugs and performing incantations which, if without effect, seriously jeopardize the lives of mother and infant. In cases of serious cephalopelvic disproportion, the woman usually dies.

When the child emerges, it is placed between its mother's thighs on a clean cloth until the delivery of the afterbirth.

Delivery of the afterbirth must follow delivery of the child so that the cord can be cut. After the delivery of the afterbirth, the cord is cut with a blade made out of carved bamboo, with a ceremonial knife, a knife used for other purposes, or with a piece of broken bottle. The length of cord left, measured from the navel, is equal to the length of the infant's thigh. The gelatine is pressed out of the cord. A knot is tied in the cord, or a ligature is made with raffia.

If the delivery of the afterbirth is slow or if the child has to be revived, the cord is cut and a piece of thread is used to attach the placental cord to the mother's thigh: this must be done, it is said, to prevent the placenta being lost.

Retention of the placenta is treated in several ways:

- holding the woman by the waist and shaking her hard;
- making her blow into a bottle in order to loosen the placenta;
- tickling her throat with a wooden spatula to make her retch;
- administration of oxytocic drugs;
- manual delivery may be performed after the hand has been covered with

a gumbo solution to facilitate insertion into the uterovaginal canal; this operation is extremely rare because of the risks involved (of infection, failure etc.) and is only decided on at the last minute, in a final effort to try to save a woman in imminent danger of death.

The placenta. This is treated with great care because it has safeguarded the life of the child; traditionally, it is known as the seat, the mother of humanity, the king of destiny. Because of this, the placenta is paid special respect. It is never thrown away. It is considered sacred and is always buried according to a traditional rite, far away from indiscreet and hostile eyes, behind the house. A hole is dug and lined with a few leaves of *Kpatima* (a plant which wards off evil spirits and protects against sorcerers, envy, etc.). The placenta is placed on top of the leaves on a piece of pottery or a gourd, the fetal surface upwards, otherwise the woman will suffer from secondary sterility. It is then covered with a second piece of pottery or gourd on which a few more leaves of *Kpatima* are laid. After a short ritual ceremony during which prayers are offered to the gods and ancestors for the fertility of the woman, the placenta is carefully buried. The ground must not be trodden down, or the baby may suffer from rhinitis.

The death of a woman in labour or childbirth is a very bad omen. The fetus is extracted from the mother. Ritual ceremonies precede the burial which takes place at night outside the burial ground in absolute secrecy. This is a bad death and must be treated without respect so that it will not happen again in the family, village or community. There is no funeral service.

Care of the new-born baby. The respiratory organs are cleared by aspiration of mucus from the nose of the newborn baby, using the mouth; phlegm is removed from its throat with the bare index finger. Yam peelings are rubbed on the body of the new-born baby as a revulsant. Purulent ophthalmia neonatorum is prevented by putting a drop of palm oil or lemon juice in each eye.

The baby is picked up by a person chosen for his or her personal qualities, because the baby will take after him or her; the same person washes it. The first toilet is meticulous. First, the vernix caseosa is removed with a mixture of palm oil and finely ground maize flour. It must all be removed so that the child will not suffer from body odours when it grows older. The new-born baby is soaped several times during this toilet. The skull is massaged so that the head will be well rounded; the joints are massaged so that the body will be supple, and the nose is also massaged to straighten it. The umbilical cord must be thoroughly cleaned at every toilet.

On the third day, *odon* (a herb) is crushed with kitchen salt and applied to the base of the umbilical cord, so that it will fall quickly.

The baby's baths are considered sacred for the first month and are given by someone who is specially qualified for the task in order to ward off any evil influence. For the same reason, the baby wears special sacred beads. The baby is bathed twice a day.

Care of the mother. The mother is cared for by a traditional specialist in obstetrical care. She is washed with plenty of hot water and given a thorough massage. The vulva is carefully washed with soft soap; wounds (perineal tears) are soaped and washed with an infusion of healing plants, and abdominal massage removes the lochia. This toilet is performed twice a day until the lochia cease and any tears have healed. A hot infusion of *Tchaka Tchaka* (a plant which gives a bitter brown infusion), a depurative, is taken twice a day, morning and evening, to ensure that the abdominal (placental) lesion heals properly and that the milk rises well. The mother must eat hot food and drink warm water for at least one to three months, to ensure good lactation and proper involution of the uterus.

The mother and child are protected against all ill fortune by ritual sacrifices and by wearing a ring and white clay beads.

This, with a few variations, is how childbirth is treated in a traditional environment; the results (poisoning, infections, perineal damage, haemorrhages, rupture of the uterus), which arise from ignorance, superstition and irrational procedures, are sometimes fatal. At the same time it is worth noting the unquestionable efficacy of the oxytocic plants, the remarkable effect of the bark infusion on lactation and on the dispersal of the oedemas, and the astonishing results of the purgative, antidiarrhoeal, revulsive and anthelmintic infusions used. There is certainly much to be learned from this traditional care.

HEALTH SERVICES

Togo is divided into five regions, and each region has a regional hospital; the central hospital in Lomé is a regional hospital which also acts as a referral hospital. In addition, there are 18 district hospitals providing medical, paediatric and obstetric services. The rural areas are served by about 280 health centres and dispensaries, and 31 maternity clinics.

The geographic distribution of health manpower is very uneven and Lomé has 70 % of the doctors, 95 % of the medical assistants, 40 % of the nurses and 50 % of the midwives. The remaining midwives work in the other hospitals and in the primary health centres; they are usually assisted by some auxiliary midwives. In some of the maternity units and secondary health centres, the auxiliary midwives will be doing the midwifery by themselves. The health centres and dispensaries may also have health assistants or nurses working in them.

In the hospitals, the midwives are responsible for prenatal and postnatal examinations of women, the management of the deliveries of those women who come to hospital, and care of the newborn children. In the health centres they have the same responsibilities, but they also find themselves responsible for women's diseases in general and gynaecological problems in particular. They also have an expanded child care role. In general, they spend most of their time at the health centres, and although they may do some home visits for health education purposes, they are discouraged from doing home deliveries.

THE NATIONAL SCHOOL OF MIDWIFERY

In the early 1960s, 90% of the population were living in rural areas, the fertility rate was still very high and there was a disturbingly high maternal and perinatal mortality from the large number of complicated cases. In 1962 there were 50 midwives in Togo, and more than half of them worked in the capital, Lomé. Some midwives were being trained in France and in Dakar but, of the six or eight who went each year, usually only half returned. Furthermore, the midwives who were trained in developed countries were in no way prepared for the role of a midwife in Togo; the tasks and problems were different. It was obvious that midwifery training was required in Togo.

In May 1964, the National School of Midwifery was founded by Decree, and it began to train midwives the following year. At first, the training had to be done in rooms in the Lomé Hospital, but in 1972 the School was able to move into its own premises, still in the grounds of the University Hospital. Unfortunately, the new building was much too small, and it is now being expanded to take 150 to 200 students.

The Principal of the School is the Professor of Gynaecology and Obstetrics at the University in Lomé. The full-time staff includes four State-registered midwives, and a State-registered nurse who is responsible for the nursing instruction to the first-year students. The General Supervisor of the Maternity Department of the University Hospital in Lomé also acts as a clinical instructor. Clinical specialists in several different fields and other state officials also take part in the teaching activities. The school is administratively responsible to both the Minister of Health and the Minister of Education.

Selection of students is by competitive examination or by diploma. Students with a primary school (six years) or a middle school (10 years) certificate must take the entrance examination covering skills in the French language, biology, physics and chemistry. Candidates who have their Baccalaureate diploma do not need to take the entrance exam. State-registered nurses who wish to do midwifery must take the examination; if they pass, they go straight into the second year, missing out the first year which mostly covers nursing skills.

The training course lasts three years. More than half of the time given to teaching consists of practical training in the hospital and health centres in Lomé. In addition there is a compulsory one month period between the second and third years when the students work in health centres in rural areas.

Assessment of students is by a process of continuous evaluation; end-of-term test marks, interviews, practical training periods, case reports, and discipline are all taken into account. Observation of the students by the tutors during practical work also provides an important assessment of technical skills, confidence, initiative and inter-personal skills.

Although a small number of students fail the probationary examination at the end of the first year, those who do successfully complete the first year are given every encouragement to complete the whole training course. This has meant that about 9 % of the students have had to repeat a year. Between 1964 and 1978 the school has graduated 202 midwives. Of these, 181 are Togolese, and are now working in health centres and maternity clinics, 75 % of them being in rural areas.

The training course

The profession of midwifery is a medical profession with a limited field of competence. The training course is designed in accordance with the role that the midwife is expected to play. Our understanding and expectations of that role have changed over the years, as will be explained below, but at any time it is that role which defines the objectives of the programme.

General objectives

At the end of her training, the midwife:

(*a*) must be equipped to work under the conditions of the country;

(*b*) must possess the necessary pioneering spirit to adapt to all situations, even the most unforeseeable;

(*c*) must be able to apply her natural creativity and to adapt to constantly changing rural and scientific worlds;

(*d*) must be aware of her usefulness and of the indispensability of her profession in all problems concerning womanhood in general, and the pregnant woman, the mother and child in particular.

Intermediate objectives

At the end of her studies, the future midwife must be able:

(*a*) to supervise the women in her care during their pregnancy as well as during and after delivery;

(*b*) to manage a delivery and to care for mother, newborn baby and the developing child;

(*c*) to provide medical care and take the necessary emergency measures in the absence of a physician;

(*d*) to identify problems and find solutions to them;

(*e*) to look after a woman from her conception until she reaches the menopause;

(*f*) to conduct among the young and adult population activities that will prevent childhood diseases, endemic and epidemic diseases, and malnutrition;

(*g*) to look after the human being as an integral whole, which implies that the midwife must have a well-developed professional conscience and a high moral sense;

(*h*) to care for members of all levels of society equally well;

(*i*) to train auxiliary personnel;

(*j*) to administer her unit;

(*k*) to supply statistical reports to the central authorities;

(*l*) to acquire a taste for continuing education;

(*m*) to fulfil her role as health counsellor and educator not only to her pregnant patients but also to their families and communities.

The curriculum

The curriculum is based upon the French system, but has various special features in order to make it relevant to the situation of Togo. These include instruction in tropical diseases and epidemiology, nutrition, health education, family health and public health administration. In addition, the teaching of psychology and sociology is intended to help the students acquire a better understanding of people and their environment so that they can give more relevant and efficient care to mothers and children.

The training programme comprises various classroom activities, including lectures, group projects and discussions, and the use of various demonstrations and audiovisual aids. More than half of the time, however, is taken up with practical work during which the students help to staff the obstetric wards at the University Hospital and the clinics at the hospital and the health centres in Lomé.

The first year concentrates on providing a basic understanding of the normal and pathological functions of the human body. It also includes an introduction to child care and development, to psychology and sociology, microbiology, hygiene and health education. During their practical work the students learn basic nursing skills and observe the various obstetric procedures in the wards and clinics.

The teaching programme for the second year is all related to normal and abnormal obstetrics and child care. While on duty in the wards, students supervise normal deliveries and look after the mothers and their newborns. They are expected to write up each case, and some of these have to be presented to other students in the group. In addition, they assist in the prenatal clinics.

During the third year they continue with the same responsibilities, but also have to deal with abnormal deliveries, and spend more time looking after sick children and women with gynaecological problems. One of the most important aspects of the third year is to prepare the students for working independently in the rural health centres and maternity clinics.

Opportunities to learn the principles of administration and to understand the need to work with other development workers in the rural areas are provided during a one-month stay at the Centre for Social Work Training in Lomé at the beginning of the second year. At the beginning of the third year, the students spend a month working with a trained midwife in a rural health centre. The experiences of these two periods can be discussed during the third year in the context of instruction on social obstetrics and social legislation, and when discussing particular cases in the wards.

Innovations in the curriculum

The adaptation of a French midwifery curriculum to meet the needs of the Togolese has had to take account of several different and important factors.

The first and most obvious difference is a biological one. The pattern of obstetrical and child health problems in West Africa is very different from that in France, and the possibilities for management and referral are also very different. The necessary changes were introduced at the very beginning of the school. The training period in the rural areas at the beginning of the third year has subsequently been introduced to help the students in their adaptation to rural practice before they have to perform on their own after graduation.

Secondly, sociological factors affect the way that health services are used. In 1969, following a study done among Togolese midwives to determine any deficiencies in the training programme, it became clear that in the rural areas women with gynaecological problems always went to the midwife for help. Subsequent surveys have underlined the amount of child health activities that the midwives are doing. Consequently, gynaecology and a much greater emphasis on child health care have been included in the training programme.

Thirdly, as can be appreciated from the account given above of traditional obstetric practices and the beliefs about sickness and health which they represent, cultural factors are of very great importance in the practice of the midwives. If the midwives are to be acceptable to the community, they obviously must understand and respect the community's beliefs sufficiently to avoid causing unnecessary offence or fear. Similarly, if good practices are to be encouraged and bad ones discouraged, both have to be known and their significance understood by the midwives. Sociology has been taught since 1964, and since 1970 some additional teaching on psychology has been included.

Other matters are under consideration. So far, only the theory of contraception has been taught. This and the whole subject of family health are now being considered as a new and important part of practical as well as theoretical training. Two of the instructors have had some training in this subject, but the proposal has yet to be presented to the Teaching Board.

As needs are perceived in the community, and as communities continue to make increasing demands upon the midwives, it is tempting to try to include just one more thing into the role and job of the midwives, and to change the curriculum to accommodate the new teaching necessary. At this stage we believe it is very necessary to draw up an inventory of the health problems of the country, particularly those affecting mothers and children, in order to determine the priority needs and their solutions. Only in this way can the role of the midwife be realistically and satisfactorily defined prior to making the necessary modifications in the objectives and curriculum of the training programme.

CHAPTER 11

FIRST AND SECOND MOSCOW MEDICAL INSTITUTES, USSR:

REFORM OF MEDICAL SYLLABUSES

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EDITORIAL NOTE

In the USSR, health manpower planning and medical education planning are the responsibility of the Ministry of Health. Though a national responsibility, there is an elaborate system of training syllabus panels at the medical institute level right up to the Ministry, whereby training syllabuses are implemented and evaluated, and new ideas suggested and approved or rejected. The need for relevance has also led to the establishment of organic links between medical institutes and their associated health service institutions.

Changes in the health care needs of the population in recent years led to the creation of a network of specialist medical facilities throughout the country and an accompanying curriculum reform designed to prepare large numbers of physicians for these main specialties.

Later curriculum changes were to focus on a more integrated and multidisciplinary teaching, to place major emphasis on a graded programme of practical clinical experience, and to introduce student research programmes.

Other issues raised include research on medical education methods to improve teaching and student evaluation, and special efforts at vocational guidance for school leavers and others to improve the career choice and commitment of students.

One of the most important functions of medical schools is to ensure that their medical training syllabuses are as appropriate as possible to the levels of development of both the nation's health services and medical science. If syllabuses are to meet the present and future requirements of the health services, and to be as effective as possible in attaining their final social purpose, they have to reflect the existing national health system, the resources available in medical schools, scientific and technological progress, the socioeconomic development of the society, changes in the structure of the urban and rural population, the establishment of new industrial areas, demographic changes, research on protection of the environment, and changes in the patterns of disease and occupational hazards.

First of all, however, these changes require an examination of the whole manpower structure of the health services to see if they are adequate to meet the changed requirements. Modifications in the numbers and types of personnel and their training have then to be planned in an integrated fashion to maintain the right balance of prevention, treatment, and rehabilitation in the health services. Planning of syllabus innovations can then ensure as close a correspondence as possible between what the future health services are to be and the training planned for the various categories of medical, specialist, and auxiliary personnel. The ultimate aim is to have as efficient and reliable a health service as is commensurate with the country's resources.

The process of syllabus modification and improvement itself has also to be planned. There has to be an organizational structure to supervise the planning and implementation of change, to decide which changes are appropriate, when they should be implemented, and how and when they should be evaluated. New teachers have to be trained and better training methods developed.

CHANGES IN HEALTH SERVICES

The development and modification of the training of physicians in the Soviet Union are closely linked with trends and developments in the national health system and its organization, and with advances in medical science and changes in medical technology.

The opening of new university medical faculties and medical institutes for training physicians in all the republics and regions has been the result of qualitative changes in socioeconomic conditions, and the needs of society for more hospital facilities. In the same way, with the increasing specialization of medicine and the development of new technologies, new specialist departments and faculties (general medicine, paediatrics, sanitation and hygiene, pharmacology and stomatology) have been started at the medical institutes, and the length of training of medical staff has had to be changed accordingly.

At present, there are more than 800 000 physicians working in the Soviet Union, and training is carried out at 83 medical institutes and nine university faculties. There are medical institutes training personnel in all the republics and regions, and all the institutes have their programmes organized in accordance with the needs of the health services.

In recent years, two particular kinds of change that have taken place have affected the training of medical personnel. First, the development of new agricultural and industrial areas in the Soviet Union has required the organization of health services for these areas. This in turn has meant either a redistribution of medical staff or the training of more. Enrolment at medical schools now stands at over 50 000, a number which largely meets the country's projected needs. However, some staffing maldistribution does still exist between the country's different oblasts and republics. These differences are explained in part by the location of medical institutes, but more often by the adverse geographic and climatic conditions in which the health services have to develop and operate.

The second change has been in the kind of health services being offered. As the coverage of the population with basic health services became adequate, the patterns of morbidity changed, and the need for more specialist services emerged. Thus, recently there has been a very rapid development in cardiology services in the Soviet Union. A network of cardiology hospitals and polyclinics has been set up to provide comprehensive diagnostic, therapeutic, and follow-up services for heart patients. Similar developments have been taking place for the treatment of patients with cancer. Specialist hospitals for sick children have been built, and the intensive-care facilities in all hospitals are being improved. All these changes have taken place as disease patterns have changed and as medical science has advanced. However, effective health planning also involves the preparation of the appropriate number of health personnel with the right kinds of skills to work in all these specialist facilities.

THE FIRST AND SECOND MOSCOW MEDICAL INSTITUTES

The important implications that medical education and the health services have for each other has led the Soviet Union to set up a joint operational system for medical institutes and public health bodies. The First and Second Moscow Medical Institutes have joint operation agreements with a number of health service facilities in Moscow and in oblasts elsewhere. This organic link between the educational establishment and health service institutions enables a constant check to be kept on the adequacy of training syllabuses, and on the need for change in order to keep them in line with the requirements of the health services and the development of the different medical specialties.

The need to improve the quality of physicians' training and to make full use of research institutes and their facilities for the training of medical personnel has led to amalgamations between faculties of medical institutes and research institutes having the same specialties. Such amalgamation has led to improvements both in the use of the scientific base of medicine and in the teaching of students. The First and Second Moscow Medical Institutes possess large central research laboratories in which the faculty teaching staff do their research. The establishment of these different research centres at the Institutes has enabled a number of faculty teams to work together in improving the standard of education.

The First and Second Moscow Medical Institutes are among the largest higher medical education establishments in the Soviet Union, and physicians are trained in the faculties of general medicine, paediatrics, sanitation and hygiene, and pharmacology. During the last few decades, a biomedical faculty has been developed in the Second Moscow Medical Institute, with three departments: biophysics, biochemistry, and medical cybernetics. This biomedical faculty trains specialists in biophysics and biochemistry to work in the faculties of other medical and research institutes.

The other role played by these two Institutes is that of educational development. They participate extensively in preparing and approving syllabuses, and introducing changes into curricula. They also do research on educational methods.

Administratively, the First and Second Moscow Medical Institutes are under the authority of the Ministry of Health. Internal management is the responsibility of the Institute's Rector, his assistant pro-rectors for individual sectors of the work, and the deans of the faculties. The governing body is the Institute's Council which considers all aspects of the Institute's work, including curriculum development, and the teaching programme. The Council also supervises the work of the faculties and the administrative subdivisions.

CURRICULUM REFORM 1967 TO 1973

As noted above, the development of health services in the Soviet Union had led to a gradual change in the patterns of morbidity and

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mortality, and in the needs of the population for health care. This, combined with advances in medical science and technology, resulted in the construction of large multidisciplinary hospitals and increasing specialization of medical care. In particular, developments were focused upon cardiology, oncology, endocrinology, anaesthesia and intensive care.

There were two implications for medical education, first the opening of new specialist faculties in the institutes, and secondly the introduction of a more specialist-oriented training programme for physicians. Curriculum reform involved the introduction of a two-year primary specialization programme in the broad clinical training disciplines. This consists of an undergraduate year of specialization while still working in the institute's clinics, followed by an internship year of further specialty training in one of the major health service hospitals related to the institute. The state qualifying examinations occur at the end of the first specialist year, i.e., the final year of the six years undergraduate course. Then, at the end of the second specialist year the specialty exams are taken. Once more, it must be pointed out that the combining of the institutes with the hospitals has helped to ensure the relevance of the institute's teaching programme and the easy modification of the syllabus when necessary.

Changes in subject syllabuses

Studies made by the First and Second Moscow Medical Institutes on the effectiveness of subject syllabus material have shown that the optimum spacing of revisions is one every three to four years. This is more frequent than used to be the case, and reflects the increased rate of advance of medical science.

Syllabuses are prepared subject by subject, but specialists in allied subjects cooperate in preparing the subject syllabuses in order to maintain horizontal and vertical integration. This has saved time and effort, avoiding unnecessary duplication, and has enabled a more rational use of teaching time. Interfaculty groups have devised interfaculty syllabuses in which the timing and sequence of subject matter have been specified according to faculty and year. This has been done in such a way that, where possible, the instruction is problem-oriented so that the students can better identify and define problems and make better use of the relevant knowledge that they acquire. Integrated, interfaculty syllabuses also make it much easier for students and teachers to assess their effectiveness.

The First and Second Moscow Medical Institutes have set up panels on teaching methods for the various subjects; the panel's chief function is to evaluate the extent to which students have profited from the training in those subjects. The panels are made up of teaching staff from the particular faculties, teachers from allied faculties, and students. At the meetings, problems in the teaching of the subject are discussed, and the current syllabus is examined and evaluated.

One of our greatest difficulties is the integration of theoretical, biomedical and clinical subjects in the training. The order in which to present the material, the best way of making a whole variety of concepts intelligible to the students, and above all how to preserve a logical connexion in the teaching between one year and the next are all problems which still have not been satisfactorily solved.

Monitoring of the teaching of syllabuses has to be continuous, because it is only in this way that gaps can be detected and the most convenient times for introducing innovations and making corrections can be ascertained. Monitoring is primarily the responsibility of the "problem panels" composed of the most senior teaching staff of the institutes. In addition, an important role in deciding matters dealing with the preparation, evaluation, and monitoring of syllabuses is played by the central subject panels on subject training methods attached to the Ministry of Health's Central Board of Educational Establishments. The members of these panels are teaching staff from the institutes, and representatives from health service institutions; this ensures the latter's participation in this work and the maximum possible objectivity in the evaluation of the syllabuses.

When it has been decided to prepare a syllabus on a particular subject, or to make innovations in an existing syllabus, the faculty with the most experience is requested to prepare a draft. This is then sent for review to a number of faculties in the same branch of medicine at other institutes. It is then referred to the appropriate subject panel, first at the institute, then at the Ministry of Health for consideration. Final adoption and approval of the syllabus is the responsibility of the central panels on methods of the Central Board of Educational Establishments.

The work of the First and Second Moscow Medical Institutes, together with that of other institutes and health services personnel, therefore, helps institutes to adjust their programmes to health service requirements. Nevertheless, the ultimate test of a syllabus is the students' success when their training ends and they graduate. Consequently, in addition to routine assessment during the course of the year, the effectiveness of the training programmes is assessed by the Institute's Council at the end of each academic year, when the students graduate.

Teaching methods

Ensuring the optimal use of a training syllabus requires adequate attention to teaching methods and technology including programmed instruction, audiovisual aids and the use of educational television and films. The need to improve the students' ability to apply their knowledge during periods of practical work, and the need to help them become competent in the diagnosis and treatment of disease has resulted in the devising of various new methods of teaching.

To encourage research and development in the teaching field, special scientific laboratories have been set up at the First and Second Moscow

Medical Institutes to study the preparation of self-teaching programmes, self-testing systems geared to different stages of the syllabus, audiovisual aids, and other original teaching methods. Help from the faculties of education and medical psychology has enabled us to adopt a more objective, scientific approach to solving training problems. For example, we have been interested in investigating which variables among the teaching methods and procedures, the order and time of introduction of subject matter, and the characteristics of the students are most important in the initial assimilation of knowledge and practical skills, and which are most important for their subsequent retention. Another interest has been the design of tests to monitor the increasing clinical abilities of students at different stages in their training. These tests have revealed many gaps in training programmes, the inability of some students to perform certain important practical procedures, and also deficiencies in the teaching methodology in certain subjects.

This work continues in spite of the difficulties resulting from the heavy teaching loads, research commitments, and clinical responsibilities of the teaching staff. However, it does mean that the teaching efforts of the staff can be carried out in the best and most efficient way, and that unnecessary duplication and repetition are avoided.

Selection of students

Much of the activity of a medical school and the success of its training programmes depend upon the kind of students who are admitted. One of the main problems confronting those responsible for admissions is that of ensuring that the young people entering medical institutes to train as physicians are adequately informed about the characteristics, difficulties, and true nature of the work they have chosen.

In order to prevent students from becoming disillusioned or losing interest, institutes and public health bodies have put a lot of emphasis on vocational guidance. This takes the form of open days at medical institutes so that school pupils can meet the medical teaching staff in the clinics and laboratories and discover more about what happens there. Special preparatory courses are held for young people working in industry or in rural occupations, and yet others are organized for people in the junior health professions who are considering training as physicians.

The experience of those responsible for preparatory courses at the First Moscow Medical Institute has shown that the people most clear about their career choice of medicine are those who come to the preparatory courses after working for at least two years as hospital orderlies or as junior staff in sanitary or epidemiology services, pharmacies, or other health service institutions.

THE NEW CURRICULUM AND SYLLABUSES 1976

In 1976, a further curriculum reform took place; this is now the one in operation at the First and Second Moscow Medical Institutes. The innovations and changes in the curriculum and syllabuses were made for three main reasons. First, there was the need to introduce students much earlier to the nature and practice of medicine, since it had been observed that under the previous curriculum a number of students began to lose interest in medicine within the first year or so. We also believe that early development of the students' vocational preferences is of importance for the quality of their subsequent training, their understanding of the significance of the subjects they are studying, and, ultimately, their making the right choice of profession.

Secondly, in order to give the teaching a sound multidisciplinary basis, there was the need to introduce the student earlier to the rudiments of general clinical medicine, and to prolong the teaching of biomedical subjects into the senior years. This would also enable the students, in the process of learning, to get a better grasp of the interrelationships between the biomedical and clinical subjects.

Thirdly, there was the need to strengthen the students' practical skills prior to the undergraduate specialization year through improving polyclinic and practical training in the earlier years.

The new curriculum has retained the old pattern of four preclinical and six clinical semesters, followed by the undergraduate specialization of two semesters, six years of study in all. The syllabuses for the preclinical and clinical disciplines have, however, been revised and changed in form. Clinical training in a particular discipline takes place, when possible, at the same time as that subject is being studied by the students so that the theoretical and biomedical subjects are being taught side by side with clinical experience.

Teaching of clinical methods (propaedeutics), therefore, begins in the fourth semester and proceeds parallel with the study of pathological physiology, morbid anatomy, and other biomedical disciplines. In the fifth and sixth years, the training syllabus for clinical disciplines includes such subjects as clinical pharmacology, clinical biochemistry, etc. In the First and Second Moscow Medical Institutes, integrated teaching methods have been introduced, several specialists lecturing on different aspects of a topic and discussing it from the points of view of their particular specialties. These various innovations in the training syllabuses with the changes in the curriculum are intended to ensure that there is better integration of the different aspects of instruction, particularly between the general and subject syllabuses.

Practical training under the new curriculum provides for annual participation in various aspects of the work of the health services. As the students progress through their training they are given increasing responsibility. They start doing practical work as a ward orderly, assistant dresser or junior nurse, and go on to practical nursing. They then work as a feldscher, progress through work as a physician's assistant to the undergraduate specialization period.

The need to familiarize the students with what the practice of medicine is all about is partly met through the students' experiences in the programme of practical training. In addition to that, however, a course called "Introduction to specialization" has been supplied in the new curriculum to meet this specific need. The lectures in this course describe the peculiarities and difficulties of the physician's calling, and include the rudiments of medical ethics and relevant aspects of the law. Education in socialist health, the organization of the national health services, medical ethics and the history of medicine, also continues at appropriate times during the remainder of the medical training.

Student scientific societies are one of the most effective instruments of general medical education for students. Over 80% of all students at the First and Second Moscow Medical Institutes take part in the activities of student scientific societies, and the Institutes' central scientific laboratories have special facilities where students can carry out research.

Recently, a compulsory programme of research has been introduced as part of the training curriculum in all institutes. The nature of the research to be carried out obviously depends upon the students' stage of training, their levels of knowledge, readiness and aptitudes, and other factors which the faculty take into account in organizing and supervising this work. This programme inevitably runs up against the problems of finding faculty time, laboratory and material resources, students' time, and the kind of skilled supervision which is necessary to stimulate the students' interest in research.

Supervision and evaluation of the new curriculum

The mechanisms for supervising and evaluating developments in the syllabuses is the same as before. Depending upon the nature of the changes proposed, they may be dealt with by the institute's subject panel, or may have to be referred to the institute's Council, or even to the central methods panels of the Central Board of Educational Establishments.

A special practical work subject methods panel has had to be set up in all the institutes; its members are the teaching staff responsible for the practical training and representatives from health service institutions, and its chairman is the dean. Its functions are highly complex, and its purpose a most important one. It evaluates the subject syllabuses and teaching methods, and recommends changes on the basis of results of the practical work; it works out the most suitable combinations of theoretical and practical work; and it makes recommendations to health service institutions as to the best way of organizing the students' work.

The findings of these panels are analysed and correlated at the Ministry of Health, where there is a central practical work subject panel. This panel makes any necessary changes in the training syllabus and prepares appropriate recommendations. The practical work and undergraduate specialization periods have, so far, provided a good basis for assessing the effectiveness of many other aspects of the students' training.

The experience of the First and Second Moscow Medical Institutes and the annual analysis of the results of practical training show that this training plays an important part in evaluating both the syllabuses and the students by indicating the amount of theoretical knowledge the students have acquired from the training course up to that point, and their ability to use that knowledge in practical health work. The number of practical skills they have learnt, and how well they can use them unaided soon become apparent. The practical training also reveals the students' motivation towards the provision of health care, the extent to which they appreciate the purpose of different aspects of the national health programme (e.g., preventive work, and the comprehensive community health centre system), and how well they can work within them.

The organization of practical work, however, is attended by a number of difficulties which reduce its effectiveness and prevent an optimal evaluation of the training syllabuses. These include difficulties in finding health service institutions with suitable standards and facilities, the variable professional and teaching experience of the students' tutors, and the difficulty of ensuring suitable composition of the student groups.

Evaluation of students

Evaluation of students' progress continues throughout the period of instruction and comprises several intermediate and one final assessment each year. For the time being, assessments continue to be done by the traditional system of programmed testing and by the still indispensable method, the student-patient-teacher clinical interview. The intention is to assess each student's knowledge, his readiness for independent professional work, and his readiness for work both in health service institutions and in community health.

These tests of student ability are also used to evaluate the success of the syllabuses which are supposed to have brought the students to the level of proficiency intended. However, in syllabus evaluation, these tests are supplemented by the opinions of the teaching staff and of representatives of the service institutions where the students do their practical training, and by feedback from the institutions where the students work after they have graduated. In this system, a certain subjective element inevitably remains.

The new curriculum and syllabuses have created new problems in both the intermediate and the final assessment of the students. In view of the changes in the order of a number of subjects, the integration of clinical and biomedical disciplines, and the introduction of the two-year internship in the broad specialties, it was decided that the final assessment should consist of a graduation thesis as well as the state examination. It was proposed that the thesis should be written in the sixth year on a topic related to the students' selected specialty, under the direction of the most experienced teachers. The state examination is conducted by a subject (specialty) examination panel, and consists first of an evaluation of the thesis presented by the student, then an oral examination on all aspects of the specialty chosen. We believe that this procedure will enable a more objective assessment of the knowledge and training of the graduating specialists, and of the training syllabuses by which they have been prepared.

As can be seen, the modern medical school in the Soviet Union today is undergoing many different and significant changes. Some of these are still at an experimental stage, their value is sometimes disputed, and all need further testing and developing. One thing, however, is certain; training in a modern medical school cannot remain the way it was. Today's first-year students will be graduating as physicians in 1984–85, and will be in their professional prime at the end of the century. What is done now and what happens far in the future are all too closely connected; maximization of the quality of medical training has to begin at once.

CHAPTER 12

UNIVERSITY OF ADEN, DEMOCRATIC YEMEN:

MEDICAL EDUCATION IN THE PEOPLE'S DEMOCRATIC REPUBLIC OF YEMEN

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EDITORIAL NOTE

The decision to start a medical school in a small developing country can never be taken lightly. This article describes some of the reasoning that went into such a decision in the People's Democratic Republic of Yemen. In trying to create an adequate health care and promotion system, it was deemed inappropriate to rely upon doctors trained abroad and usually for different health care systems. It was considered essential to train specifically in the practice and philosophy of the health care system of Democratic Yemen.

Three aspects of the training programme are of note. First, the preclinical phase of the programme is integrated into a series of weekly units which focus upon a particular topic or system. These weekly units involve an introduction by the faculty followed by independent study and laboratory work leading to seminars at the end of the week.

The second noteworthy aspect is the use of a general instructional unit called "Man and his environment" throughout the whole course. It integrates the social, psychological and public health aspects into the programme, and requires considerable field work by students.

The third point of interest is the emphasis given to scientific investigation. Much of this is applied research, and is intended primarily to encourage a scientific approach to the solution of problems and the ability to make use of medical literature. It also aims at contributing to health services research in Democratic Yemen.

After years of colonial rule, the People's Democratic Republic of Yemen suffered from low socioeconomic development, high illiteracy, lack of health care, and restricted food and water hygiene control. After independence, the revolutionary Government launched, in 1969, a major phase in the building of a new society. Policy was formulated in terms of integrated socioeconomic development planning.

The main goals of the national development plans may be outlined as follows:

(*a*) To usher in a new stage in the economic policy pursued by the State, designed to orient the service economy to a productive one dependent upon agriculture and industry;

(*b*) To construct the material and technical base needed to develop the economic potential of the country and raise the material and cultural standard of living of the masses;

(*c*) To consolidate public and cooperative ownership;

(*d*) To widen the scope and raise the standard of cultural, educational, and health services.

Prior to independence, there was no national educational system. The great majority of the population were illiterate. Schools were available only in the capital city, Aden, and in some other large towns. The highest level of education was the secondary school. Education for girls was almost non-existent.

The development of the national educational system has therefore been given a high priority by the revolutionary Government. This priority has been put into action through the extension of schools to almost every village and the restructuring of curricula and plans of study at all levels. Under the new unified educational system it became compulsory for every child to complete the eighth grade.

As well as the provision of education for all children, illiteracy eradication centres have been established throughout the country for adults. Over 85 000 students are enrolled in 910 centres at present, and more than 5000 teachers are participating.

Leadership and promotion of the different sectors of the national economy have required the preparation of national cadres of skilled people through higher education. Initially, students had to be sent abroad for training and qualification in the different disciplines and specialties. Later, in 1975, the University of Aden was founded. It comprises the faculties of Higher Education, Agriculture, Economics and Administration, Medicine, and Engineering.

HEALTH POLICY AND PLANNING

The Constitution of Democratic Yemen states the health policy of the country in broad terms as follows:

> Health care is a right for all citizens. The State should guarantee this right through the establishment of various types of health institutions and hospitals, the organization of the medical profession, expansion of free health services and the spread of health education among the citizens.

In the first two health development plans for the periods 1971–1974 and 1974–1978 respectively, the general health policy and objectives were summarized as follows:

(*a*) Developing the health services and raising their quantitative and qualitative standards;

(*b*) Expansion of the network of health institutions, especially in the rural areas;

(*c*) Training and development of health personnel at all levels;

(*d*) Taking effective measures for the control of and protection against infectious diseases;

(*e*) The promotion of health care for mothers and children.

To achieve these goals the necessary health manpower has to be available. The Institute of Health Manpower Development was therefore established, in 1970, to train different categories of medium grade personnel. This training programme is assisted by several of the organizations within the United Nations system. During the period 1970 to 1975, 868 students completed their training in the institute. In order to meet the rapidly increasing need for trained health manpower, similar institutes have been established in other governorates.

Medical education

Until 1975, all medical doctors were trained abroad. The Government realized that this complete dependence on training institutions in other countries could never fulfil the objectives of the country's health policy, directed to the maximum coverage of the population by basic health services.

It is clear that health needs and problems, and the approaches to them, differ from one society to another, depending upon the stage of socio-economic development of the society. Medical education, too, has to be appropriate. It was realized that the future doctor needed by Democratic Yemen should not only be well qualified in medical and health sciences but should also have a very good understanding of the social and cultural values of the society.

With the development of the new society, with the revolutionary transformations which were taking place in the different sectors of the national economy, and with the development of the people's educational and cultural standards, the concept of health was also undergoing a great change. Health had become no longer just an individual affair, but an obligatory concern of society; it was not merely the absence of disease, but the active maintenance of a biological, social, and psychological balance between man and his environment.

Taking all these facts into consideration, the foundation of a school of medicine in Democratic Yemen was, in 1975, an objective historical necessity.

THE MEDICAL SCHOOL

The first steps were taken in July 1972 when the first National Health Conference was convened. In view of the acute shortage of doctors and other health workers, one of the recommendations of that Conference was to study the possibility of founding a school of medicine in the country. At that time, such an idea seemed to be a great aspiration and ambition. The revolutionary transformation of the country, however, indicated that the great aspirations of the people could be translated into reality if the masses could be organized under the revolutionary leadership.

Transformations had been realized in the economic and social realms. In the field of health, one such revolutionary transformation was the complete cessation of private practice. The urgent need to prepare qualified health manpower to meet the health needs of the country was, consequently, fully appreciated and supported by the political leaders.

But how was a start to be made? What system should be followed? Should the preparation of teaching staff be undertaken immediately or should the buildings and laboratories be made ready first? These and many other questions arose. But waiting until everything was ready would make it impossible to catch up with all the changes taking place. A start had to be made and the necessary preparations would have to be carried out along the way.

In September 1974, the Government passed a decree for the foundation of the School of Medicine. In October, the first group of teaching staff was selected, and during the first six months of 1975 they went to Cuba to attend a special training course in medical education planning and organization. In October 1975, the Medical School received the first intake of 64 students.

Two old barracks in the area of the Faculty of Higher Education had been selected as a temporary centre for the Faculty of Medicine. One of these barracks is used for administration and the teaching staff, the other was turned into two classrooms. Use was made of the facilities available in the Faculty of Higher Education, especially laboratories.

During the first academic year, preparations continued for the following two years. Another barrack was converted into two multidisciplinary laboratories for anatomy, histology, physiology, and biochemistry, and a small laboratory for research. The great need for library services led to one of the classrooms being converted into a library. At the beginning of 1978, it was possible to establish a third multidisciplinary laboratory, and a fourth one is now in preparation.

The plan of study

The plan of study has been developed according to a system of integrated medical education. This integration is both vertical and horizontal. The horizontal integration is achieved through interdisciplinary teaching, developed according to scientific logical units of knowledge. Each unit deals with a system or apparatus of the human body, and detailed programmes of study have been developed for each by committees made up of representatives of each of the disciplines involved.

The vertical integration of the programme is achieved by a general unit called "Man and his environment". In this unit, continuing throughout the whole period of study, the social, psychological and preventive aspects of the programme are dealt with.

The duration of study is seven years, divided into the following three phases:

Phase I	
Introduction to medical sciences	One year
Normal structure and function	Two years
Phase II	
Pathological structure and function	Two years
Phase III	
Integral medical assistance	One year
Internship	One year

With the exception of the first year, in which teaching is given within independent disciplines, the teaching throughout the programme is conducted through interdisciplinary integration and coordination. By June

1978, the first group of students had completed phase I and, in October 1978, they were the first group to commence their training in the clinical area.

The following methods of instruction are used: theoretical classes; practical sessions; and seminars.

Classical lectures have been replaced by theoretical introductions which start the students on a new topic at the beginning of each week. Theoretical introductions are presented by one or a group of the teaching staff according to the nature of the topic to be studied. During the theoretical introduction, the plan of study of the whole week is explained. Special emphasis is given to the points which are not clear in the textbooks and also to any difficult points.

The second and the third days of each week are usually devoted to practical classes, and the fourth and the fifth days are devoted to seminars. Students are divided into groups not exceeding 32 for seminars. At the beginning and end of each seminar students take an active role in the teaching/learning process. This method has been found very useful for the process of continuous evaluation of the students and also for developing better relationships between them and the teaching staff.

Independent study is encouraged by detailed study programmes which are distributed to the students at the beginning of each unit. Because no special textbooks have been prepared for the integrated medical education plan, the study programmes are most useful. They contain detailed explanations of each topic, the textbooks in which it should be studied, and the pages to be read.

Man and his environment

From the first year of study, the concept of health as a biological, social and psychological balance between man and his environment is emphasized in the general unit "Man and his environment". This unit integrates medical sociology, medical psychology, hygiene and epidemiology, and public health organization. The unit plays an important integrating role in the whole programme and is included in all phases of the study.

The practical importance of the social and psychological factors for health is studied in the community. Duties are assigned to the students who visit homes, schools, and work centres to study health conditions, collect data and give health education as required. Students prepare reports about their findings, some of which are presented at the annual student scientific session.

Scientific investigation

Scientific investigation is included in the curriculum. A formal course in scientific methodology and statistics is given in the second year. The objective of this course is not to prepare research workers but to develop the student's capacity to use the scientific method and apply it to his daily working problems, to help him in understanding scientific articles, and to encourage the habit of independent study.

Scientific activities are planned at the beginning of each academic year, and students form groups for this purpose. In spite of the fact that these activities are optional, participation by the students exceeds 95 %. At the end of each year, a scientific session is organized in which the results of scientific work are presented by the students and the teaching staff. At this session, doctors working in different health institutions are also invited to present their work. The objectives of these scientific sessions, as stated in the first information letter on the third scientific session in May 1978, are the following:

(*a*) The development of the scientific aspects of the work in order to apply the faculty motto, "Study, Work, Investigation".

(*b*) The creation and promotion of close coordination between the basic and clinical sciences as a first step to their complete integration, with the aim of achieving the integrated preparation of future doctors and raising the quality of health services for the people;

(*c*) The intensification of the work, started in 1977, of transforming Algamhouria Hospital into a teaching hospital; and

(*d*) The systematic study and analysis of some of the most common health problems of society in the country.

The results achieved so far in these areas are very encouraging. Together with the experience gained in other aspects of the programme, they inspire confidence that succeeding phases in the development of the School of Medicine will be completed successfully.

CHAPTER 13

THE MEDICAL FACULTY AT NOVI SAD, YUGOSLAVIA:

NEW TRENDS IN THE PROMOTION OF A SYSTEM OF MEDICAL EDUCATION

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EDITORIAL NOTE

Three important developments are identified in this account of the medical faculty at Novi Sad. The first two are organizational and administrative changes brought about in response to Government legislation. The third, a change in the medical curriculum, arose from local initiative to make the medical training more relevant to the needs of the community.

In the past, the medical faculty had been responsible for preclinical studies, the hospitals had provided medical care, and the scientific research had been done in research institutes. The way in which these three sets of institutions and their activities were merged into an organic whole is described.

The new administrative structure emphasizes the need for participation of everyone involved in the different institutions in order to ensure social relevance. The interested parties include not only all employees in an institution but also consumers of the services provided. Of particular interest, therefore, are what are called the self-management communities of interest, made up of both providers and consumers of services, which have to approve the plans and budgets of the institution, whether for educational, health care or scientific activities.

The final section of the paper describes how the faculty, aware of the need for more primary care and community physicians, conducted a survey of graduates working in primary care in order to discover how the curriculum might be changed to make it more relevant to the community.

The Medical Faculty at Novi Sad is one of ten medical faculties in Yugoslavia. It was founded in 1960, and in 1977 was constituted as a unique educational, scientific and health institution; that is to say that its educational role was united to scientific activities in the field of medicine. The Medical Faculty at Novi Sad thus provides medical care at the highest technical level and acts as the supreme institution of its kind for the whole territory of the Province of Vojvodina.

The unity of educational, scientific and health activities has so far been realized only at Novi Sad, although this process is under way at other faculties of medicine in Yugoslavia.

BACKGROUND INFORMATION

According to the census of 1971, Yugoslavia had 20.5 million inhabitants, while an estimation made in 1977 indicated that the population had risen to 21.9 million. Yugoslavia is a socialist confederacy composed of six republics and two autonomous provinces. From being a typical agricultural country, it has now reached a medium level of development, and only 38% of the population now make their living from agriculture.

In the postwar period, Yugoslavia was extensively engaged in dynamic economic development and the social product was increased more than fivefold. Such dynamic development was reflected in the development of the school system, medical care, culture, social and child care. The population structure also changed as did the most important demographic indicators.

	Demographic indicators per 1000			
	Birth-rate	*Mortality*	*Natural increase in population*	*Infant mortality*
1955	26.9	11.4	15.5	112.8
1965	21.0	8.8	12.2	71.8
1975	18.1	8.7	9.4	39.9

Significant differences have been noticed in relation to causes of mortality and morbidity. Leading causes of death are cardiovascular diseases, malignant neoplasms, and injuries, while chronic diseases are predominant in the morbidity structure. Acute infectious diseases including tuberculosis have been considerably reduced both in the mortality and in the morbidity patterns. Tuberculosis control is the best illustration of this condition. In 1965, 186 552 cases of tuberculosis were registered, that is to say, 941 per 100 000 population. Ten years later, the number of affected persons was only 86 900, or 407 per 100 000 population. At the same time, the number of persons registered as suffering from malignant neoplasms increased from 260 to 440 per 100 000 population. In the total morbidity structure, an increase from 6 % to 12 % in the participation of cardiovascular diseases was recorded in the same period.

Medical care

The health services were very intensively developed in the postwar period. The number of physicians was increased more than four times, as was the capacity of outpatient health institutions, while the capacity of inpatient institutions was more than doubled.

Immediately after the war, in 1949, there were about 3000 organized health service units providing outpatient medical care; in 1973, there were more than 13 000. In the same period, the number of hospital beds increased from 60 000 to 124 000, or from three to six per 1000 population. Similarly, the number of physicians increased from less than 5000 to over 24 000.

The number of inhabitants per physician is currently around 850. Of all physicians, 63 % are men and 37 % are women; over 95 % work in health institutions; 52.3 % are specialists and only 21 % are general practitioners, the rest being physicians in the process of specialization.

Education of physicians

In Yugoslavia, there are ten faculties of medicine, three faculties of stomatology and one faculty of pharmacology. Apart from these, there are departments of stomatology in four of the faculties of medicine, and departments of pharmacology in two of the faculties of medicine. Pupils who finish secondary school and have followed an appropriate course, i.e., grammar school or intermediate medical school, may be admitted directly to the faculty, while those who complete secondary school by following any other programme have to pass additional examinations. As a rule, there are more applicants than places available and, because of this, entry is generally by open competition. Previous school performance is taken into account in addition to the results of faculty tests in physics, chemistry and biology.

In the academic year 1975/76 there were a total of 14 493 students at all faculties of medicine combined. There were 3617 freshmen in that year. Some 1500 to 2000 students take their academic degree per annum; for example, 1732 students of medicine graduated in 1975. A constant increase in the number of female students is characteristic.

Medical studies last five years or ten semesters but all students do not graduate on schedule. The average study period may therefore be considered to be over six years. There are approximately 14 students per teacher (assistant, assistant professor, or professor) during the first two years of study; in the last three years, the ratio is 1:5. After completing their medical studies, young physicians are obliged to undertake an internship of 12 months which includes practical work under the supervision of experienced physicians. Two-thirds of the internship period is spent in hospitals and one-third at outpatient and preventive institutions.

Participation of students in faculty management

Students take part in all stages of the management process at faculties through their representatives who are members of all administrative organs including the highest body, the Council. They have the right to take decisions on all questions except the election of teaching personnel by the Elective Chamber. They do, however, take part in confirming such decisions at the Council of the faculty. Apart from this participation, students elect a representative who is accorded the position of vice-dean and is responsible for student questions

THE MEDICAL FACULTY AT NOVI SAD

The Medical Faculty at Novi Sad was founded on 18 May 1960 and regular teaching courses started at the beginning of October of that year. For the first few years, the Faculty of Medicine at Belgrade provided some assistance. In the first school year there were 169 new students. The number of freshmen remained between 130 and 160 per annum until the academic year 1974/75, when it increased to 245; in 1976/77 the entry was 255. In 1977/78, 200 medical students were enrolled. In 1976/77 a department of stomatology was constituted as part of the Medical Faculty at Novi Sad; 49 students were admitted to this department in the first year and 51 in the following year.

Organization of the Medical Faculty

The reform of the educational system in Yugoslavia started in 1974 on the basis of a political decision taken at the highest level. The basic principles of this reform are:

(*a*) the linking of science, education and health care practice into a unique functional system;

(*b*) the integration of education, in the sense of programming education in order to ensure the vertical and horizontal linking of the teaching process as a whole;

(*c*) provision for accommodating the decisions of the working class on educational policy and its development;

(*d*) equal sociopolitical status for teaching personnel and production workers.

Laws have been passed and programmes of activities established on the basis of these principles, putting the new educational policy into operation throughout the whole country. Novi Sad has set the first complete example of the realization of this policy.

During 1975, a detailed analysis was made of the academic structure of the University of Novi Sad, including a consideration of existing problems; on the basis of this analysis, an action programme was accepted which would put the new educational policy into practice. Each faculty then drew up its own programme of reforms on the basis of this overall action programme. A proposal dealing with the current situation of the Medical Faculty as well as the direction of its further development was submitted to all interested institutions for their consideration.

Before 1977 the Medical Faculty at Novi Sad was exclusively an educational institution, composed solely of departments of the preclinical subjects. A number of other institutions provided teaching in practical work: the Clinical Hospital at Novi Sad, the Special Hospital for Tuberculosis, the Institute of Public Health, the Institute of Maternal and Child Care and the Rehabilitation Institute. Teaching staff had full-time jobs at the Faculty and part-time jobs at these institutions. Research work was linked to the Faculty in so far as allowed by the financial resources provided by the Scientific Work Fund.

The new concept of the Medical Faculty is that of an integrated unit of instruction (education), science and health activities. In conformity with this concept, a proposal was made for a reorganization of the Faculty. This proposal was accepted in December 1976 following a referendum. (The referendum was a secret ballot of all employees of all interested institutions.) The new Medical Faculty was constituted by uniting the existing Faculty, the Clinical Hospital, the Institute of Public Health, the Special Hospital for Tuberculosis, the Institute of Maternal and Child Care and the Rehabilitation Institute. Under its new organization the Medical Faculty is an institution that provides:

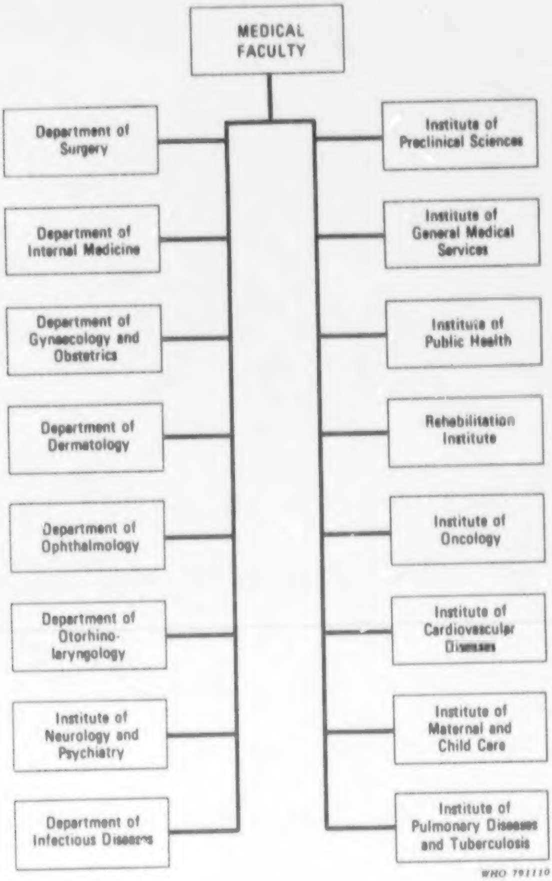
(*a*) education and training of health manpower at undergraduate level, and postgraduate training including courses for master and doctorate degrees and for specializations in all branches of medicine;

(*b*) medical care, especially inpatient treatment and rehabilitation, consultative outpatient services and preventive work; and

(*c*) organization and improvement of research work.

The Medical Faculty is now made up of 16 departments or institutes which each provide medical care as well as being engaged in the teaching process and in research work (see Fig. 1).

FIG. 1. DEPARTMENTS OF THE MEDICAL FACULTY AT NOVI SAD


MEDICAL FACULTY
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Department of Internal Medicine
Department of Gynaecology and Obstetrics
Department of Dermatology
Department of Ophthalmology
Department of Otorhino-laryngology
Institute of Neurology and Psychiatry
Department of Infectious Diseases
Institute of Preclinical Sciences
Institute of General Medical Services
Institute of Public Health
Rehabilitation Institute
Institute of Oncology
Institute of Cardiovascular Diseases
Institute of Maternal and Child Care
Institute of Pulmonary Diseases and Tuberculosis
WHO 791110

The Council of the Medical Faculty

The Council of the Medical Faculty is the supreme organ of management. It is made up of delegates elected to the Council by each of the component institutions on the basis of one delegate per 100 employees. One third of the Council consists of delegates from governmental, political and non-governmental organizations. In addition, a number of students also serve on the Council.

The Council has the following functions:

(*a*) It confirms proposals for the Statute of the Medical Faculty;

(*b*) It approves the work plan and programme of the Faculty;

(*c*) It draws up educational plans and programmes;

(*d*) It confirms the election of professors and assistants at the Faculty;

(*e*) It announces open competitions for the enrolment of students to undergraduate and postgraduate courses at the Faculty;

(*f*) It gives guidelines and instructions to the Executive Committee.

The Executive Committee

The Executive Committee administers the work of the Faculty, it coordinates the activities of the executive organs of the component institutions and is responsible for the implementation of the rules and decisions of the Council of the Faculty. The Committee is headed by the Dean who is, in turn, responsible to the Council of the Faculty. The Dean and Vice-Deans are elected for periods of four years.

Subcommittees of the Medical Faculty

In addition to the Executive Committee, the various subcommittees act as executive organs of the Council. They consist of members appointed by the Council, headed by a Vice-Dean. Their main task is to consider proposals to be submitted to the Council for decision. They also deal with the daily running of their respective fields as well as any problems that arise. The four subcommittees are: the Subcommittee on Undergraduate Education; the Subcommittee on Medical Care; the Subcommittee on Research and Postgraduate Training; and the Subcommittee on Manpower and Development.

Besides the four subcommittees headed by the Vice-Deans, there is a Teachers and Scientific Workers Subcommittee, headed by the Dean, which elects teachers, scientific workers and assistants.

Management of component institutions

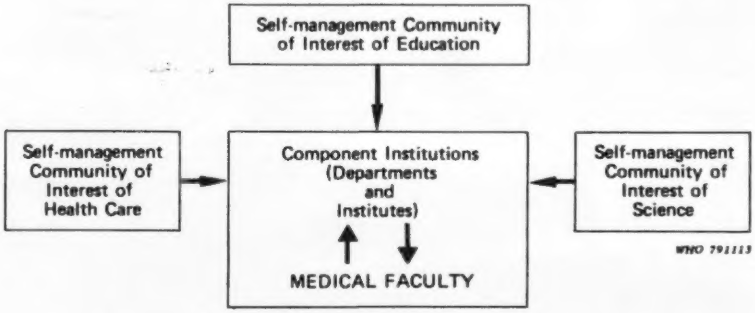
Within the component institutions the framework of the management process is based on the Working Community and the Workers' Council. The Working Community is made up of all the employees of the institution, headed by a chairman; it is empowered to take decisions on all essential questions. The Workers' Council consists of delegates elected by the workers; its authority is similar to that of the Council of the Faculty. There is no body corresponding to the Executive Committee of the Faculty, but a director is appointed in each of the component institutions to be responsible for the implementation of rules and decisions made by the Workers' Council and by the Working Community.

Under the new organization, the component institutions have been given a much more important role. The new scheme unites educational, scientific and health activities and provides financial resources for these activities from three basic sources: the self-management community of interest of education, the self-management community of interest of health care and the self-management community of interest of science.

Financial resources are provided according to the needs of the programmes planned by the component institutions and approved by the relevant self-management communities of interest (see Fig. 2). Financial resources to meet the needs of the Faculty as a whole are provided by the component institutions (i.e. by the departments and institutes).

The undergraduate and postgraduate courses, health care activities and scientific work are carried out in all the component institutions. Teaching personnel participate in training, in the examination and treatment of patients and other health activities, and in research work. Despite their involvement in all three types of activity, they are assigned one salary, proportional to their participation in each. The salaries of other employees also depend upon their participation in each of these activities. For example, a professor can earn 40 % of his salary through training activities, another 20 % for scientific work and the final 40 % for health care activities. Another employee will earn different proportions of his salary from the three activities, while some physicians and other health workers who are not involved in research or teaching will get none of their salary from those sources.

FIG. 2. SOURCES OF FINANCE FOR THE ACTIVITIES OF THE MEDICAL FACULTY AT NOVI SAD


Self-management Community of Interest of Education
Self-management Community of Interest of Health Care
Component Institutions (Departments and Institutes)
Self-management Community of Interest of Science
MEDICAL FACULTY
WHO 791113

The self-management communities of interest

The self-management communities of interest constitute an innovation in the management system. They were formed to deal with various kinds of social activities including health, education and science, and private channels through which workers can exercise their democratic rights in influencing the fields of education, health etc. They oversee the implementation of these activities and provide financial resources for the work and development of the component institutions.

Self-management communities of interest also have legislative functions. Their supreme organ is the Assembly which is made up of delegates elected by working people in organizations that are consumers of services and of delegates from educational, health and scientific institutions that provide these services. Self-management communities of interest are conceived as the forums for negotiation between consumers and providers of services on all questions in which both are interested. Through them workers may influence decisions on current as well as on future health, educational and scientific developments, and providers of services may receive social recognition and material compensation for their work. In official terminology it is called free work exchange.

EDUCATIONAL PLAN AND PROGRAMME

The last 30 years have seen many changes in educational plans and programmes at medical faculties. Medical studies used to last six years until, in 1960, their duration was decreased to five years. Plans and programmes are similar in medical faculties throughout the country. If differences do exist, they are not of a kind to influence the training of a physician or the possibility of his employment in any part of the country. The coordination of the plans and programmes of various medical faculties is carried out by the interfaculty coordination body. Only the duration of study and the maximum number of lessons are determined by law; other planning decisions rest with the statutes of the individual faculties. Educational plans and programmes have a very important bearing on the reform of the educational system. The educational plan determines the subjects in each semester and the number of theoretical and practical lessons, while the programme sets out the educational content, that is to say, the topic units of both theoretical and practical training.

As at other medical faculties, educational plans and programmes have been altered at the Medical Faculty at Novi Sad. The last changes, in 1974, sought to put more emphasis on social sciences than on preclinical subjects; epidemiology and social medicine were shifted from the final year to the third year.

Following the reorganization of the Medical Faculty, a reform of the educational plan and programme was undertaken. For the first time, a clear and precise task was set: undergraduate courses at the Medical

Faculty were to prepare the students to be general practitioners and enable them, both theoretically and practically, to solve the health problems of the local communities in which they will work. A special commission has considered this question and has worked out a scheme of study for the purpose of defining the role of a modern general practitioner as well as establishing the educational plan and programme necessary to train physicians.

Studies have been carried out in the following areas:

(*a*) A comparison between the health care system which is set up by law and the objectives of educational plans and programmes in the health field;

(*b*) The organization of health services at all levels, from primary health care up to sophisticated hospital care, with manpower analysis including the role of the general practitioner;

(*c*) Analyses of the health status of the people, the changes which have taken place over the last 10 years, as well as projections of future trends;

(*d*) Demographic analyses, especially analyses of the changes in population structure; and

(*e*) Environmental and occupational factors which have an influence on health.

A number of more or less authoritative evaluations have been made so far of the education provided for health manpower at the Medical Faculty. The general consensus is that health workers are much better at theory than at practice, that they are more at home in dealing with an individual than in performing community work, and that, taken as a whole, they lack a sufficient preventive orientation.

Surveys

Before the new educational plan and programme were drawn up in the first half of 1978, extensive investigations were carried out among health workers to get their opinions on the efficacy of medical studies. For this purpose, representatives of the Medical Faculty at Novi Sad conducted interviews with physicians working in outpatient services in nine communities to obtain their opinions concerning the plan and programme of medical studies and internship. Subsequently, a survey was made of 180 general practitioners working in Vojvodina who had taken their diplomas at the Novi Sad Medical Faculty. Replies were received from 105 physicians. The survey took the form of a questionnaire containing 46 questions dealing with modes of study as well as with the relevance of medical education to independent work in general practice.

The first question asked for an assessment of the level of achievement of the Medical Faculty at Novi Sad in its role of preparing physicians for independent work in general practice. The response was as follows: "very good", 6 %; "adequate", 66 %; and "inadequate", 28 %. Theoretical education was said to be "very good" by 56 % of the general practitioners, 44 % said that it was "adequate", while none of them responded with "inadequate".

With respect to practical knowledge, however, the response was quite different. Only 4 % of general practitioners considered such education "very good", 33 % said that it was "adequate" and 63 % felt it to be "inadequate". Insufficient synchronization of theoretical and practical education was the main cause of dissatisfaction with the practical training.

The period of internship, following medical studies, was generally criticized; 75 % of general practitioners were dissatisfied with the internship programme. The main reason for this discontent was the fact that internship was usually undertaken at large clinical centres where new graduates were not given sufficient attention.

A number of questions concerned qualification for certain diagnostic and therapeutic procedures. In response, 4 % of physicians declared that they did not feel qualified for minor surgery, 25 % thought that they were not sufficiently qualified for emergency services, and 51 % had a poor opinion of their training to provide obstetric services at home. Regarding the control and prevention of infectious diseases, 25 % of physicians considered that they were not sufficiently trained for certain preventive activities, and over 30 % that they were not familiar with basic sociomedical methods for use in the community. The majority of doctors (68 %) declared that they had not acquired a good enough knowledge of epidemiological and dispensary work methods.

The replies to the 46 questions were analysed in detail. It became clear that the reform of the educational plan and programme should be oriented towards a more intensive provision of practical qualifications, with special emphasis on meeting the needs of outpatient services. At the same time, a close integration should exist between theoretical and practical education, so that the student would be able to put into practice everything he learned in theory. Undergraduate courses at the Medical Faculty should, in the main, relate to actual health problems and more emphasis should be laid on sociomedical problems.

A proposal was made for a new educational plan and programme. This proposal has been discussed, not only at other faculties, but also at health institutions, in self-management communities of interest, and among students. It contains certain innovations:

(*a*) The total number of practical lessons should be increased;

(*b*) Theoretical education is to take place in small groups, and practical education is to be organized in such a way that every student is given the opportunity to practise all those procedures he is expected to perform later;

(*c*) At least 30 % of practical lessons should take place at outpatient institutions; and

(*d*) Internship is to be undertaken exclusively at smaller hospitals or outpatient institutions and only practical knowledge should be checked.

A large number of lessons are to be devoted to preventive branches and social medicine.

Learning objectives, institutional, intermediate, and specific, have thus been established for the first time at the Medical Faculty at Novi Sad. These learning objectives will now make possible a systematic evaluation of the educational process.

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